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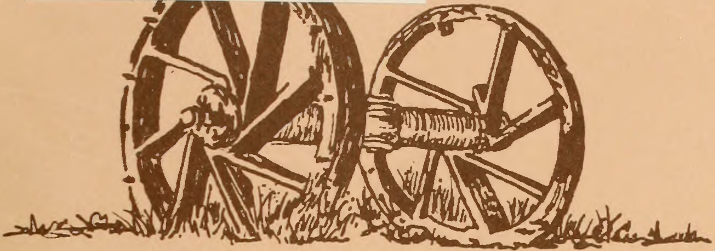
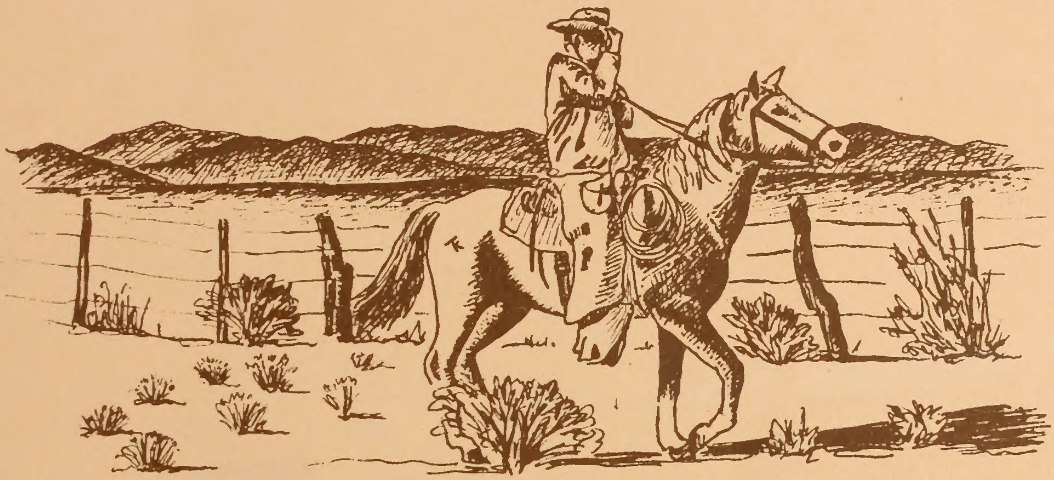


CARLSBAD RESOURCE AREA

RESOURCE MANAGEMENT PLAN
ENVIRONMENTAL IMPACT STATEMENT



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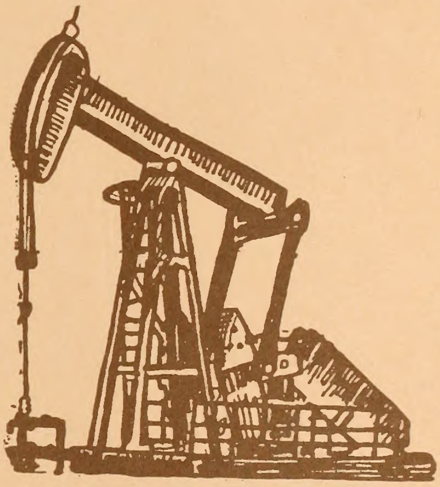

US DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ROSWELL DISTRICT OFFICE
NEW MEXICO

FEBRUARY 1986

BLM-NM-PT-86-004-4410

March 3 1849

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Roswell District Office
P. O. Box 1397
Roswell, New Mexico 88201

IN REPLY
REFER TO:

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

Dear Reader

Enclosed for your review and comment is the Draft Carlsbad Resource Management Plan/Environmental Impact Statement (RMP/EIS). This document outlines five alternative plans for managing the public land in the Carlsbad Resource Area in Eddy and Lea and southwest Chaves Counties. Alternative C is the preferred alternative. The purpose of the RMP/EIS is to disclose in advance the probable environmental impact of the alternative plans and to ensure that these factors are considered in the decision making process.

Public hearing to receive comment will be held on May 7, 1986, at 2 p.m. and 7 p.m. at the Carlsbad Municipal Library, Halagueno Park and Fox Streets.

We would appreciate your comments on the environmental impacts of the alternative plans. Questions and/or comments should be directed to:

Charles Dahlen, Area Manager
Carlsbad Resource Area
101 E. Mermod
P. O. Box 1778
Carlsbad, NM 88220

Sincerely yours,

Francis R Cherry Jr

Francis R. Cherry, Jr.
District Manager

ID#88007474

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RESOURCE MANAGEMENT PLAN/
ENVIRONMENTAL IMPACT STATEMENT

for the

CARLSBAD RESOURCE AREA

BLM Library
D-553A, Building 50
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DRAFT (X) FINAL ( )

The United States Department of the Interior, Bureau of Land Management

1. Type of Action: Administrative (X) Legislative ( )

2. Abstract: This Draft Resource Management Plan and Environmental Impact Statement describes and analyzes four alternatives for managing the public lands and resources in the Roswell District Carlsbad Resource Area, which are: (A) Current Management (No Action), (B) Resource Production, Proposed Action (Preferred Alternative), and (D) Resource Protection.

3. Comments have been requested from the following: (See Chapter 5, Consultation and Coordination, for a summary of individuals and groups on our mailing list).

4. For Further information, contact:

Charles S. Dahlen, Area Manager
Bureau of Land Management
Carlsbad Resource Area
101 E. Mermod Street
P. O. Box 1778
Carlsbad, New Mexico 38220
Telephone: (505) 887-6544

5. Comments on the Draft statement must be received no later than: June 9, 1986.

Recommended:
Francis K Cherry
District Manager

Approved:
Charles W. Luscher
State Director

SUMMARY

This Draft Resource Management Plan and Environmental Impact Statement (RMP/EIS) identifies and analyzes the future options for managing the public land and Federal mineral estate administered by the Bureau of Land Management (BLM) through the Carlsbad Resource Area (CRA) office of the Roswell District. The CRA encompasses 2,171,000 acres of Federal surface and 2,725,405 acres of Federal minerals, including all of Eddy and Lea Counties and southwest Chaves County. Map A (in back cover pocket) displays the surface ownership pattern within the CRA.

The Carlsbad Resource Management Plan (RMP) is being prepared using the BLM planning regulations (43 CFR 1600) issued under the authority of the Federal Land Policy and Management Act (FLPMA) of 1976 and the National Environmental Policy Act (NEPA) of 1978. The RMP will provide a comprehensive framework for managing and allocating public land and resource uses during the next five to twenty years.

The contents of this document focuses on resolving the following issues: Land Tenure; Mineral and Energy Resources; Rangeland Resources; Special Management Areas; and Access. Each issue and its related planning criteria are described in Chapter 1.

ISSUE 1. LAND TENURE

This issue was presented to the public in the form of a question during the scoping process:

"Which public land tracts would be retained, disposed, or studied further for possible disposal?"

Public land may be made available for disposal through sales or exchanges. Transfers to other public agencies will be considered where either method may be permitted, based on applying the specific criteria for sales as detailed in 43 CFR 2710.0-3.

ISSUE 2. MINERALS AND ENERGY RESOURCES

Production of oil, natural gas, and potash are significant uses, surface-disturbing activities associated with their development sometimes conflict with other authorized land uses or other resource values.

ISSUE 3. RANGELAND RESOURCES

The principal consideration for this issue is to determine what management changes and/ or adjustments in allowable livestock grazing uses are needed to reduce conflicts with other uses of public lands. Decisions affecting grazing allotments east of the Pecos River were analyzed in the East Roswell Grazing EIS (BLM 1979) and will not be analyzed in this RMP. Wildlife habitat are also considered under this issue.

ISSUE 4. SPECIAL MANAGEMENT AREAS

Special Management Areas (SMAs) have been identified through resource program procedures, each having its own criteria for identification and management emphasis for priority uses in the area. Consequently, planning criteria vary by program or SMA affected. All SMAs with primary emphasis for wildlife, riparian or Threatened or Endangered (T&E) species are addressed in the wildlife section under Rangeland Resources.

The following are the resource programs involved with SMAs.

Fire Management

The RMP will identify areas which require special fire management. Public lands are classified for full suppression unless specifically identified for limited fire suppression management and prescribed fires.

Recreation

Areas requiring intensive management to achieve the BLM's recreation objectives and to provide specific recreation opportunities may be identified as Special Recreation Management Areas (SRMA).

Off-road Vehicles

All public land will be designated open to Off-road Vehicle (ORV) use unless designated closed or limited to protect resources, to promote the safety, or to minimize conflicts between the various users of those lands. Areas may be designated for intensive ORV use to accomodate competitive events or recreational use.

Visual Resources

The RMP establishes Visual Resource Management (VRM) class objectives on public lands. Areas along highways, roads, trails, or streams with high scenic qualities may be designated as Scenic Areas.

Cultural Resources

The RMP provides for the recognition and/or preservation of significant cultural and historical sites. Site locations are not always disclosed in the RMP to protect them from vandalism or theft.

Paleontological Resources

Protection of known paleontological sites will be provided through protection measures or by designations for known sites to provide for future research and education needs.

Rights-of-Way/Avoidance Areas

Public lands may be designated as right-of-way corridors or as avoidance areas to protect environmental and social values while optimizing economic efficiency for utilities and transportation facilities. The RMP identifies which public lands should be avoided when routing future rights-of-way in order to protect sensitive resource values, and which areas should be designated as corridors

ISSUE 5. ACCESS

Development of adequate access to areas of public land, especially those having no legal access, is a concern. The primary emphasis for the access issue is to determine the relative need (priorities) for obtaining additional access to tracts of public land.

SUMMARY OF RESOURCE MANAGEMENT ALTERNATIVES AND THEIR ENVIRONMENTAL CONSEQUENCES

Four RMP alternatives were developed that describe the different management options available to respond to the issues and concerns expressed by the public and BLM early in the planning process. Each alternative presents a different blend of resource allocations and uses which together with the Continuing Management Guidance form a separate, feasible land use plan.

The alternatives and their associated impacts are summarized below. Chapter Two fully describes the alternatives, and the land use allocations are summarized in table 2-15. Chapter Four describes the impacts of each alternative and these impacts are summarized in table 4-13.

ALTERNATIVE A

This alternative provides a baseline for comparing the other alternatives by describing the current levels of resource uses and protection. The analysis describes the cumulative effects of continuing current management, both in the short- and the long-term.

LAND TENURE

Approximately 47,262 acres would be removed from Federal ownership, with 90 percent of the lands identified for State exchange.

Positive long-term effects would include increased efficiency and lower cost of BLM surface management. Negative impacts would be the problem of split ownership of the surface and subsurface estates created when the surface passes from Federal ownership.

MINERAL AND ENERGY RESOURCES

Oil and Gas

The CRA would be open for oil and gas leasing except for 11,680 acres of existing withdrawals.

Oil and gas no surface occupancy (NSO) stipulations within the Laguna Plata SMA would require directional drilling which could increase costs of drilling most wells by approximately 40 percent.

Special stipulations for flood plains, visual resources, cave protection and for wildlife habitat would continue. Oil and gas drilling in the Potash Area would continue to be subject to current policy and procedures. Seasonal oil and gas drilling stipulations would continue in the San Simon Swale Pronghorn Antelope Habitat Area.

LEASABLE SOLID MINERALS

Potash

Potash leasing would continue, except in withdrawn areas, subject to standard stipulations.

Other Leasable Solid Minerals

Exploring for and developing leasable minerals would continue except for withdrawn areas.

Salable Minerals

Mineral material pits would continue to be opened with standard stipulations where needed, except in areas that are withdrawn or where protection is required by law. Unnecessary pits would be closed and rehabilitated on a priority basis.

Locatable Minerals

The CRA would be available for location of minerals under the General Mining Laws except within current withdrawals totaling 14,249 acres.

RANGELAND RESOURCES ISSUE

Soil and Water

Alternative A would continue the present trends in erosion and sedimentation as a result of mineral and energy development. Watershed condition in areas not affected by minerals activity would remain static. Many areas of highly erodable soils or sensitive water quality would not have sufficient protection.

Vegetation

Current vegetation trends would continue in the short-term. While the overall type and productivity of forage species produced on public lands could decline over portions of the planning areas in the long term.

Livestock Grazing

Alternative A would continue current management of 12 Allotment Management Plans (AMP) covering 200,000 acres. The maintenance of existing range improvements would require approximately $200,000 in range improvement funds over a ten-year period. No adjustments are proposed in grazing preference.

Wildlife Habitat

Management of wildlife habitat management would continue to be emphasized for the game species under the jurisdiction of the New Mexico Department of Game and Fish (NMDG&F).

Seasonal drilling and grazing restrictions in the 25,000 acre San Simon Swale Pronghorn Antelope Habitat Area would continue.

Terrestrial wildlife habitat condition would decline under this alternative. Current management and protection of Federally listed T&E species would continue. Oil and gas activities would cause negative impacts on habitat, especially riparian areas. Potash and sulphur development could cause significant impacts to wildlife habitat.

Aquatic habitat condition would continue to decline. This decrease is a result of the lack of riparian/aquatic management in grazing AMPs; the lack of inventory data on perennial water sources; and the lack of public land ownership along perennial water sources.

Threatened or Endangered Species

The recovery plan for the gypsum wild buckwheat critical habitat, located in the Seven Rivers Hills SMA, would be implemented. Long term monitoring studies would continue and the interim emergency ORV closure to prevent damage by vehicle would remain in effect.

SPECIAL MANAGEMENT AREAS

SMA currently designated or proposed are displayed on Table 2-5. There would be 11 SMAs covering 49,580 acres of public land. Each SMA would have an activity plan developed for it.

Continuing current uses in existing SMAs areas would result in the deterioration or loss of a wide variety of special values. These include cultural resources, geological formations, botanical areas, visual resources and wildlife habitats, along with their related scientific, interpretive, and education opportunities.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Under Alternative A, no Areas of Critical Environmental Concern (ACEC) would be designated.

Fire Management

Current management direction would continue the full suppression except for 7,393 acres which would be designated as a limited suppression or prescribed fire area to constrain suppression methods for protection of sensitive resource values. A Limited or prescribed fire plan and program would be implemented on the 7,393 acres once the fire plans are written and approved.

Recreation

A campground would be developed to accomodate overnight recreation use at Red Bluff Reservoir.

Public lands would remain open for hunting, ORV use, and other recreational pursuits. Permits for organized commercial and competitive uses would be processed on a case-by-case basis.

The recreation needs might not be met by continuation of current management. If increased recreation demands were not met additional user conflicts both among recreation users and with other public land users could occur.

Cave Resources

Thirteen caves are currently gated and closed to use except by special permit. Less intensive visitor management would continue for unpermitted and ungated caves.

Current withdrawals for cave resources (820 acres), intensive management of 13 gated caves, and protective stipulations adjacent to cave features would provide some protection for cave resources. However, these protective measures would be insufficient to protect important cave resources from mining, nearby blasting, and other potentially destructive impacts.

Off-Road Vehicles (ORV)

No new ORV closed or limited use designations would be implemented. An emergency ORV closure on 540 acres in Seven River Hills would remain in effect.

Visual Resource Management

Objectives for Visual Resources Management (VRM) established in the East Eddy-Lea Management Framework Plan (MFP) would continue, with Class II objectives along a portion of the Pecos River and in the Pierce Canyon area. The Maroon Cliffs, Livingston

Ridge, Mescalero Ridge, and the Salt Lake areas are designated VRM Class III, and the remainder of the CRA east of the Pecos River is designated Class IV.

Established VRM class objectives on public lands on the east side of the Pecos River along with existing policy would prohibit extensive changes in VRM classes. However, lack of VRM class designations west of the Pecos River would result in gradual, moderate changes in the characteristic landscape. Impacts to visual resources west of the Pecos River would be evaluated as needed during the environmental assessment (EA) process.

Cultural Resources

All surface disturbing activities would require cultural resource inventory prior to authorization. Consultation with the State Historic Preservation Officer (SHPO) is initiated if cultural resources are encountered. Mitigative measures are developed by BLM and the SHPO. Management of cultural resources would continue to be emphasized at Laguna Plata, Maroon Cliffs, Pierce Canyon, Potash Bull Wheel, and Pope's Well.

The impacts of the exploration for and development of minerals would continue to be mitigated according to Federal laws and BLM policies. Rangeland management and fire control policies would have few significant long-term effects of cultural resources. However, current access and ORV management policies would continue to cause significant long-term impacts.

Paleontological Resources

Dry Cave, a gated cave with important paleontological values, would remain closed except for authorized scientific research. Other important paleontological sites would be protected upon discovery.

Rights-of-way

Corridors

Five designated rights-of-way corridors totaling approximately 185 miles would continue. Areas protected by law, such as archaeological sites and T&E Species habitats, would continue to be avoided as determined through the EA process.

Avoidance Areas

Use of existing right-of-way avoidance areas covering 7,398 acres would continue without significant effects.

ACCESS ISSUE

The BLM would continue to retain existing legal and physical access, and to cooperate with the county governments to keep county roads open to public access. Existing land use decisions would be used to develop acquisition priorities. In areas not covered by land use plans, access needs would be evaluated on a case by case basis.

Since there would be no emphasis on resolving access problems in this alternative, there would not be a significant increase in access to public lands.

ALTERNATIVE B

This alternative emphasizes production and/or consumption of resources. High priority would be given to programs which might improve economic conditions in the CRA.

Alternative B is more protective than Alternative A partially due to the lack of planning on portions of the CRA and partially due to changes in or to ensure conformance with various laws, regulations, and policies. Consequently, this alternative provides the minimum acceptable level of resource protection while still having only mininal impacts on industry.

LAND TENURE

Approximately 220,700 acres of public lands would be proposed for disposal. Disposal of suitable tracts would not cause any significant impact to public land resource values or to the local economies. The only potentially significant impacts would be to individual land users or owners of land adjacent to, or surrounding, disposal tracts. Property taxes and payments in lieu of taxes (PILT) to the county could be slightly affected. State surface land with Federal minerals would have high priority for exchanges in order to minimize the split estate.

MINERALS AND ENERGY RESOURCES

Oil and Gas

Alternative B would increase the acreage open to oil and gas leasing under special stipulations to a total of 552,237 acres. Of the total, 11,757 acres would be under the NSO stipulation. Seasonal stipulations, including no drilling near active nests, would be imposed to protect 89,360 acres of raptor nesting habitat and 26,800 acres of great blue heron nesting habitat. Existing seasonal drilling stipulations on 25,000 acres of San Simon Swale pronghorn antelope habitat would be removed.

Leasable Solid Minerals

Potash

Acres not open to leasing (NOL) of potash would increase. A total of 2,682,384 acres of Federal subsurface mineral estate would be open for leasing and development under standard stipulations.

Other Leasable Solid Minerals

The increase in the acreage covered by NSO from 11,640 acres to 4,361 acres will decrease the acreage available for prospecting permits by 10,144 acres. The effect of the decrease is impossible to quantify because there are no core logs showing what is underground in these areas.

Salable Mineral Materials

About 2.7 million acres of Federal subsurface estate would be open and about 46,191 acres would be closed to mineral material sales.

Locatable Minerals

The current withdrawals from mineral entry under the 1872 Mining Laws would be increased to 22,004 acres. Two withdrawals would be reduced in size, but the net increase area-wide would be about 28 percent.

RANGELAND RESOURCE ISSUE

Soil and Water

Implementation of Alternative B would result in continued loss of soil productivity and increased erosion and sedimentation. Many highly erodable areas and sensitive waters would be protected by restricting mineral activity and surface disturbance. This alternative proposes more intensive grazing management which would improve watershed conditions in many livestock areas.

Livestock Grazing

Under this alternative, the 12 existing AMPs would be fully implemented and maintained. An additional 54 Cooperative Management Plans (CMPs) would be developed and implemented. Total acres covered by AMPs and CMPs would be 691,000. Livestock grazing capacity would increase from 192,000 to 232,417 Animal Unit Months (AUMs) and approximately $1.6 million would be spent on rangeland improvement.

Short-term impacts to livestock grazing would be mitigated by the nonuse that has typically occurred.

In the long-term, the overall productivity of forage species on public lands would improve under this alternative.

Wildlife Habitat

Seasonal drilling and grazing restrictions would be removed from the San Simon Swale Pronghorn Antelope Habitat area. However, seasonal drilling restrictions would be applied on 89,360 acres of raptor nesting habitat and 26,800 acres of heron nesting habitat.

Yeso Hills (5,460) and Pecos River/Canyons Complex (4,230 acres) would be designated as ACESs. Within the Pecos River/Canyons Complex ACEC a 1,520 acre Research Natural Area (RNA) would be designated.

Terrestrial wildlife habitat condition in general would remain stable. In general, aquatic habitat condition would continue to decline at a moderate rate, due to increased industrial production.

A Habitat Management Plan (HMP) would be developed on 161 acres of springs habitat. Approximately 1,330 acres of riparian habitat would be fenced to exclude livestock. An additional 2,500 acres would be intensively managed to improve wildlife habitat condition.

Threatened or Endangered Species Habitat

Protection and management of threatened or endangered (T&E) species habitat would increase which would cause moderate improvement on 1,205 acres of habitat.

HMP would be implemented at Seven Rivers Hills (540 acres) and at Ben Slaughter Draw (205 acres) to protect the gypsum wild buckwheat (Eriogonum gypsophilum) and its habitat.

An ACEC would be designated on 160 acres of Federal surface and 440 acres of Federal subsurface adjacent to Blue Spring to protect the Federally Endangered Pecos gambusia (Gambusia nobilis).

A 100-acre RNA would be designated to protect the ramshorn snail (Pecosorbis kansensis) habitat located in Little McKittrick Draw. ORV use and livestock grazing would be excluded from the RNA.

Habitat (200 acres) for the bluntnose shiner (Notropis simus pecosensis) would be intensively managed.

SPECIAL MANAGEMENT AREAS

There would be 21 SMAs containing 226,922 acres.

Areas of Critical Environmental Concern (ACEC)

Six areas, Chosa Draw Caves Complex (720 acres), Dark Canyon (3,950 acres), Lonesome Ridge (2,990 acres), Blue Spring (160 acres), Yeso Hills (5,460 acres) and Pecos River/ Canyons Complex (4,390 acres), would be designated ACEC.

Fire Management

Limited fire suppression would be implemented on 231,602 acres, with full suppression over the remainder of public lands.

Recreation

Recreation facilities at Red Bluff Reservoir would be included in 6,000-acre Pecos River Corridor SRMA, with partial provision for the protection of water-based recreation values.

Impacts on dispersed recreation uses would be similar to those in Alternative A. Establishment of the Cave Resources SRMA, Dark Canyon ACEC, and Lonesome Ridge Outstanding Natural Area (ONA) would provide some protection of recreational opportunities in these areas.

Off Road Vehicles

Twenty areas covering 50,059 acres would be designated limited for ORV use. ORV closures would decrease from 4,615 to 3,999 acres. Hackberry Lake, 55,800 acres, and Alkali Lake, 900 acres would be managed as intensive ORV use areas.

Impacts would be similar to Alternative A, except for slight adverse impacts to ORV users due to closures and limitations. Establishment of the Hackberry Lake and Alkali Lake Intensive ORV use areas would ensure that other uses would not significantly interfere with ORV use in the areas.

Cave Resources

Caves within the 387,000-acre cave resource primary occurrence zone would be closed to exploration for and development of solid minerals.

Thirteen presently gated and five ungated caves would be intensively managed as a 4,460-acre Cave Resource SRMA. This would provide protection for all intensively managed cave areas but would not provide complete protection for four of the areas because of continued mineral exploration and development or an insufficient buffer area for sensitive cave resources.

Visual Resources Management

The CRA would be designated in the following VRM classes: Class I, 2,240 acres; Class II, 23,620 acres; Class III, 290,020 acres; Class IV, 1,855,120 acres. Designating VRM classes west of the Pecos River would reduce the amount of potential visual intrusions in this area. However, continued oil and gas and other development would cause a moderate long term change in the characteristic landscape. Highly sensitive visual resources adjacent to National Park and National Forest boundaries would not be given adequate protection. A Guadalupe Escarpment Scenic Area (8,820 acres) would be established.

Cultural Resources

There would be 16,198 acres in six Cultural Resource Management Areas (CRMA).

The overall effects of Alternative B for cultural resources are unchanged from the previous alternative for the most part. In this alternative, 0.8 percent of the total CRA would be protectively managed. The additional acreages proposed for SMAs with special protective sitpulations would enhance preservation of cultural resources. The removal of NSO stipulations from Laguna Plata and Maroon Cliffs and downgrading the ORV closure at Laguna Plata to a limited designation would diminish the protective management for these cultural SMAs. The effects of access and ORV management remain unchanged from Alternative A. The emphasis on production of resources will require the increased of patrol and monitoring efforts to ensure compliance with Federal law and BLM policy.

Paleontological Resources

Designation of Dry Cave as a 420-acre Research Natural Area (RNA) would allow protective management for research and education. The size of the RNA would allow for continued exploration of cave passages while ensuring sufficient protection of the cave.

Rights-of-way

Avoidance Areas

The establishment of 15,878 acres (0.7 percent of CRA) of avoidance areas would increase costs for some rights-of-way by requiring longer routes around avoidance areas. Most rights-of-way avoidance areas in Alternative B would correspond to SMAs (see Appendix E).

ACCESS

Legal access would be acquired on a quarter-mile road segment which presently forms a gap in Lea County Road C-2. There are 19 tracts where restrictions on vehicule use would be implemented to support the objectives of SMAs.

Impacts would be similar to those discussed for Alternative A, except that vehicular access to public lands would be reduced in 19 tracts totaling 54,058 acres.

Social and Economic Conditions

In general, the economic impacts to the oil and gas industry from this alternative would be insignificant.

In the short-term, Alternative B would reduce livestock grazing preference from the current 216,369 animal unit months (AUMs) to approximately 192,000 AUMs

In the long-term, the BLM would expend $1.6 million for range improvement projects, which would increase the available forage from approximately 192,000 AUMs to 232,000 AUMs.

If the increase in the opportunities for employement were fully realized, personal income within the CRA would increase by approximately $288,000 for the livestock and other related industry sectors together. Returns to operators (livestock sector) would increase an estimated 57 percent, provided ranchers increase their operations to take 100 percent advantage of the additional available forage.

ALTERNATIVE C

Alternative C is the preferred alternative and would resolve issues by balancing resource utilization with conservation.

LAND TENURE

There are 220,700 acres of public lands proposed for disposal. Priority disposals would be in east Lea County, southwest Chaves County, and the Hart Canyon, lower Black River, and the Hope areas of Eddy County. Acquisition of 1,080 acres of private land an estimated 2,120 acres of State land is proposed for acquisition.

Impacts would be similar to those for Alternative B and more emphasis would be placed on balancing disposals by sale with disposals through exchange. Land acquisitions would improve public access, improve resource values of affected public land tracts, and eliminate much of the potential for conflicting uses.

MINERALS AND ENERGY

Oil and Gas

The acreage of Federal subsurface mineral estate open for oil and gas leasing under special stipulations would increase by 50,231 acres to a total of approximately 597,068 acres. Of the total acreage with special stipulations, 44,007 acres would be under the NSO stipulation.

Drilling would be prohibited within 450 feet of known cave features, an increase from the current 300-foot distance.

NSO stipulations would require directional drilling which could largely eliminate shallow wells, including some in areas of high potential and increase drilling costs. Additional restrictions would include full site samplings of a few designated cultural areas, restrictions or geophysical exploration and increased seasonal drilling restrictions in designated wildlife and scenic areas.

Potash

Prospecting permits or leases would not be approved for sulphur, sodium, and potash within 24 areas covering 43,976 acres. Core testing for potash would be foregone in Maroon Cliffs and Laguna Plata SMAs.

Other Leasable Solid Minerals

Sodium would not be affected, however, sulphur exploration would be reduced in the Yeso Hills SMA.

Salable Mineral

About 66,000 acres would be closed to mineral material disposal. Users would be impacted adversely if mineral locations are in excess of two miles from point of use.

Locatable Minerals

In addition to the existing 14,249 acres of withdrawals, 11,629 acres would be withdrawn from mineral entry under the 1872 Mining

Laws. However, significant impacts are not anticipated for mining.

RANGELAND RESOURCES

Soil and Water

Loss of soil productivity, increasing erosion, and sedimentation would continue over most of the CRA. However, most areas with fragile or erodable soils and sensitive water would be protected from adverse impacts by special surface disturbance stipulations.

Vegetation

Proposed range improvements and vegetative treatments would have positive affects for vegetation similar to those listed under Alternative B, however, fewer sites would be converted from poor to fair condition and from fair to good condition.

Livestock Grazing

Under this alternative the 12 existing AMPs would be fully implemented and maintained. An additional 49 CMPs would be developed and implemented. Total acres covered by AMPs and CMPs would be 413,000 acres and approximately $900,000 would be spent on rangeland improvement.

Under this alternative, an initial reduction of 24,859 AUMs would be implemented on all allotments. Short-term impacts to livestock grazing would be mitigated by the nonuse that has typically occurred.

In the long-term, livestock grazing would increase from 192,000 AUMs to 225,000 AUMs and livestock operators would realize significant increases in production.

Wildlife Habitat

HMP would be implemented for mule deer on approximately 125,000 acres and pronghorn antelope 114,500 acres. They would include wildlife, water development, fence modifications, and prescribed burning. Game bird habitat quality would be improved by an HMP covering 96,000 acres. Prescriptions and acreages for HMPs on springs, riparian, and pseudoriparian habitats would be the same as Alternative B.

Overall habitat condition would improve slightly and populations would increase. Sensitive, pseudoriparian, and riparian habitat condition would improve significantly as described in Alternative B.

A 640-acre RNA would be designated within the Yeso Hills ACEC described under alternative B. A 1,360-acre South Texas Hill RNA would also be designated. The RNA within the Pecos River/Canyons Complex would increase to 2,320 acres.

This alternative would improve ecological trends.

Threatened or Endangered Species Habitat

A HMP covering 640 acres at Blue Spring would be developed, if the 480 acres of private and State surface can be acquired as proposed. Acquisition of 480 acres of non-Federal surface at Blue Spring would serve to protect and enhance aquatic habitat for the T&E fish species in the spring. All other SMAs would remain as described under alternative B.

The Little McKittrick Draw Ramshorn Snail RNA would be increased an additional 400 acres as a buffer.

Stipulations on surface occupancy and disturbance would also protect and significantly improve T&E habitat conditions.

SPECIAL MANAGEMENT AREAS

There would be 22 SMAs totalling 274,712 acres (12.6 %) of public land. Each SMA would have an activity plan to implement the proposed management prescriptions.

Areas of Critical Environmental Concern

The same six ACECs listed in Alternative B would be designated in Alternative C, but the total acreage would be increased from 17,670 to 19,950 acres. Acquisition of 1,920 acres of private and State properties to support

ACEC management would increase the total acreage to 21,870.

Acquisition of 480 acres of private land and 40 acres of mineral estate in Chosa Draw Caves Complex ACEC would assist consolidating an extensive gypsum cave complex under Federal management. Consolidating ownership of these active hydrologic caves with the extensive Parks Ranch cave system would ensure adequate protection of the significant hydrologic, biologic, and geologic cave resources within this area.

Management of 2,990 acres on Lonesome Ridge as an ACEC and ONA with restrictions on all surface disturbing actions would provide protection for high natural and scenic values and Federal listed plants.

The 3,950-acre Dark Canyon ACEC would protect high scenic and cave values and state listed plants. Acquiring private lands for the Blue Springs ACEC (480 acres) and Chosa Draw Caves Complex ACEC (480 acres) would enhance opportunities for environmental interpretation and education.

A 640-acre RNA would be designated within the Yeso Hills ACEC to preserve a representation of the area's fragile soils and unique gypsophilic vegetation and ecosystem.

Acquisition of 120 acres of private land and 840 acres of state land at the Pecos River/Canyons ACEC would consolidate management for a unique canyon/river complex with fragile and varied soils, high visual values, and several state listed plant and animal species. The designated RNA within the ACEC would increase from 1,520 acres (Alternative B) to 2,320 acres.

Fire Management

Limited fire suppression and prescribed fire management would occur on approximately 237,232 acres, and full suppression would continue over the remainder of the CRA.

Recreation

Important water-based recreation values would receive adequate protection in the Pecos River Corridor SRMA.

Increased intensive management of certain SMAs would greatly enhance the quality of recreation opportunities.

Buffer areas around major recreational caves, particularly at McKittrick Hill, would enhance camping, picnicking, sightseeing, and other activities associated with caving in semiprimitive settings.

Increased access would open up nearly all of the CRA for dispersed recreational use and allow public use of SMAs possessing important recreation values.

Off Road Vehicles

Twenty areas would be designated as limited for ORV use, increasing the current 19,766 acres to 79,359 acres. A total of 8,509 acres would be designated closed to vehicle use. This would decrease the opportunity for ORV use slightly.

Hackberry Lake (55,800 acres) and Alkali Lake (900 acres) intensive ORV use areas would be managed the same as in Alternative B with the same resultant impacts.

Cave Resources

This alternative would provide significantly greater protection to cave resouces by prohibiting oil and gas development within a minimum of 450 feet of significant cave and karst features.

Caves within the cave resource primary occurrence zone would be closed to the exploration and development of leasable solid minerals. Management of cave resources would be the same as for Alternative B except that 8 cave areas totalling 7,620 acres would be protected by various stipulations and use restrictions.

The Cave Resource SRMA would increase to 5,990 acres.

Increasing the size of the Lonesome Ridge ONA from 2,240 to 2,990 acres would prohibit drilling on 750 additional acres of ridge tops, and provide significantly greater protection to the cave resources in this area.

Visual Resource Management

The CRA would be delineated into the following visual resource management classes: Class I, 2,990 acres; Class II, 37,520 acres; Class III, 276,160 acres; and Class IV, 1,854,330 acres.

The Guadalupe Escarpment Scenic Area would be increased to 49,570 acres. Upgrading the VRM Class in Zone I (8,820 acres) of the Guadalupe Escarpment Scenic Area, along with other resource development restrictions would increase protection of sensitive visual values. The remaining 40,750 acres would still be subject to moderate visual change.

Cultural Resources

Cultural Resources would be managed the same as in Alternative B, except that the Bear Grass Draw CRMA would be increased from 320 to 1,780 acres.

The protection of cultural resources is enhanced by increased acreages under NSO, leasing closures for solid and locatable minerals, and site specific surface disturbance restrictions. ORV closures and limitations for Laguna Plata, Bear Grass Draw, and the Poco Site. The protective management of the CRMAs will provide increased opportunities for education and public involvement.

Paleontological Resources

The effects of designating Dry Cave as a 420-acre Research Natural Area would be the same as those described under Alternative B.

Rights-of-way

Right-of-way Avoidance Areas established 23 Special Management Areas, would be an increase of 18 SMAs and 32,593 acres .over Alternative A.

Impacts will be similar to Alternative B, except a total of 39,991 acres (1.8 percent of the CRA) would be affected.

ACCESS ISSUE

Short-term goals would be to develop activity plans and provide adequate access to six high priority tracts. Long-term goals would be to improve access in eleven moderate and eight low priority tracts.

Access acquisitions would allow for increased public use and meet BLM administrative needs in the 25 access tracts. This alternative would result in the resolution of access problems due to reduced user conflicts and increased efficiency in managing public lands.

Restrictions in 23 access tracts would benefit sensitive resources and would contribute significantly to their increased public value.

Socio-Economic Conditions

The long-term impacts of this Alternative C would be the same as Alternative B for the exchange, acquisition, or sale of lands.

In general, the impacts to the oil and gas industry would be slightly higher than in Alternative B, but would not be significant. Increased drilling costs due to directional drilling would exceed $10 million.

In the short-term, forage available for livestock would be reduced by 24,859 AUMs (from preference to current five-year average use).

In the long-term, the BLM would expend approximately $900,000 on range improvements and vegetation treatments.

Personal income within the CRA would increase by approximately $407 million for the livestock and other related industry sectors together. Returns to operators (livestock sector) are estimated to increase by 32 percent.

ALTERNATIVE D

The objective of Alternative D is to emphasize resolution of issues in favor of resource protection and preservation of sensitive, natural, cultural, and aesthetic values. Commodity or non-renewable resource use would be permitted only to an extent compatible with this resource conservation emphasis.

LAND TENURE ADJUSTMENT

Approximately 220,700 acres of public lands would be disposed of and 5,246 acres of State lands and 1,280 acres of private lands would be required to support the Pecos River/Canyons Complex, Blue Spring ACEC, Dark Canyon, and Chosa Draw ACEC, the Laguna Plata Archaeological District, and the Maroon Cliffs Archaeological District.

MINERALS AND ENERGY RESOURCES

Oil and Gas

The acreage of Federal subsurface mineral estate open for oil and gas leasing with special stipulations would increase to a total of 599,120 acres. Of the total acreage with special stipulations, the acreage under the NSO stipulation would increase to 59,527 acres.

Drilling would be prohibited within 600 feet of cave resources. About 387,000 acres would be affected.

Seasonal stipulations, including "no drilling," would be increased from the current 25,000 acres to a total of 141,890 acres. Oil and gas drilling and production would be prohibited in 100-year flood plains. Enclosed salt water disposal tanks would be required except for the salt water disposal area. Netting would be required on all new salt water disposal pits and tanks in CRA to protect livestock and wildlife.

Potash

Areas NOL would be increased to 102,596 acres. Core tests for potash would be foregone in the Maroon Cliffs and Laguna Plata SMAs.

Other Leasable Solid Minerals

Alternative D would leave a total of approximately 2 million acres open solid minerals for leasing and development under standard stipulations.

Salable Minerals

Caliche, sand, gravel, and building stone would continue to be available from approximately 2.7 million acres of public lands. Thirty-one areas covering 66,923 acres would be closed to mineral materials sales. This is an increase of 64,183 acres over the current 3,130 acres closed to material sales.

Locatable Minerals

In addition to the existing 14,249 acres of withdrawals, 17,761 acres would be withdrawn from mineral entry under the 1872 Mining Laws, for a total of 32,010 acres.

Special stipulations imposed on the minerals industry would cause adverse impacts.

RANGELAND RESOURCE

Soil and Water

Under Alternative D, erosion and sedimentation from mineral activity and ORV use would be substantially decreased, however, fewer vegetation treatments would allow fewer opportunities to increase cover and, consequently, reduce erosion and sedimentation. The net result would be a slight decrease in erosion and sedimentation overall.

Vegetation

Rangeland, T&E, pseudoriparian, riparian, and sensitive habitat conditions and overall habitat quality would improve significantly due to improved ecological condition of vegetation.

Perennial and ephemeral water sources on or adjacent to public lands would improve in the long-term due to terrestrial habitat improvements. Pseudoriaprian and riparian habitat improvements would significantly improve aquatic systems in the short term. In turn, successional aquatic populations would improve in health and numbers.

Livestock Grazing

The 12 existing AMPs would be fully implemented and maintained. An additional 45 CMPs would be developed and implemented. Total acres covered by AMPs and CMPs would be 349,000 acres, and $580,000 would be spent on rangeland improvements. In the long term (20 years), livestock grazing would decrease from 192,000 AUMs to 191,000 AUMs.

In the long term, the overall productivity of forage species on public lands would improve slightly under this alternative.

Short and long-term impacts to livestock operators would be partly mitigated by the nonuse that has typically occurred.

Wildlife Habitat

The habitat management objectives in Alternative D are the same as Alternative C except:

> The San Simon Swale Pronghorn Antelope Habitat restrictions would remain with limited ORV use (25,000 acres);
>
> Springs HMP will increase by 202 acres to 726 acres.
>
> South Texas Hill Canyon RNA will increase by 600 acres to 1,960 acres.

Threatened and Endangered Species Habitat

The acreage in the Ben Slaughter Draw HMP would increase to 375 acres to provide 170 acres of additional protection for the gypsum buckwheat habitat.

SPECIAL MANAGEMENT AREAS ISSUE

Twenty-three SMAs totalling 301,944 acres would have activity plans developed. This would be an increase of 252,364 acres over Alternative A, and represents 13.9 percent of the public lands in the CRA.

Area of Critical Environmental Concern

ACEC designations would be applied to 6 areas totalling 20,110 acres, or 160 acres more than Alternative C. The increase would be for the Chosa Draw Caves Complex. Aquisition of 3,960 acres of private and State lands to support ACEC management would increase the total acreage to 24,070 acres.

Fire Management

Limited fire suppression and prescribed fire management zones would cover 238,664 acres, and full suppression would continue over the remainder of the CRA.

Recreation

Management of the Pecos River Corridor SRMA would be the same as in Alternative Cexcept for an increase from 120 acres to 160 acres at Red Bluff Reservoir for intensive recreation facility development.

The impacts to recreation would be similar to those described in Alternatives B and C. Increases in SMA acreage, with increased protective stipulations, would slightly enhance recreational opportunities due to additional restrictions on surface disturbing activities. Access restrictions in several large tracts of public land would prevent dispersed recreation use of these areas. Semiprimitive motorized and non-motorized recreation opportunities would generally be maintained for SMAs with high value recreation opportunities.

Off Road Vehicles

Twenty-three areas totalling 323,759 acres would be designated as limited for ORV use. This would be an increase of 303,993 acres and 17 areas from Alternative A. ORV closures would increase from 4,615 to 8,531 acres in 11 areas, an increase of 303,993 acres and 8 closed areas.

Although there would be a significant increase in limited ORV designations under this alternative, the most popular ORV use areas would still be designated as open. There would be a slight negative impact on ORV recreational use opportunities.

Cave Resources

Management of cave resources would be the same as Alternative C, except for increased protection of caves due to increased avoidance stipulations within the primary cave occurrence zone and the larger protective buffer within the Chosa Draw Cave Complex ACEC.

Impacts on cave resources would be similar to those for Alternative C. However, prohibiting oil and gas drilling a minimum of 600 feet from cave and karst features would further protect caves within the cave resource primary occurrence zone. Caves within the cave resource primary occurrence zone would be closed to exploration and development of leasable solid minerals. There would also be an increased protective buffer around the Chosa Draw caves, thus preserving significant hydrologic, biologic, and geologic cave resources within the area.

Visual Resources Management

Locations of Class I and Class II VRM objectives would generally be the same as in Alternative C. Class II designation for the intensively managed cave areas would increase from 5,670 acres to 5,690 acres.

Under Alternative D, 276,900 acres (12.7% of the CRA) would be designated Class III, while 1,853,560 acres (85.3% of the CRA) would be managed as Class IV.

The Guadalupe Escarpment Scenic Area would be managed the same as under Alternative C.

Impacts would be similar to Alternative C, with a slight overall increase in retention of the characteristic landscape from increases in SMA acreage and rights-of-way avoidance areas, and a decrease in vegetation treatments.

Cultural Resources

Cultural resources would be managed the same as Alternatives B and C, except that the Bear Grass Draw CRMA would be increased from 3,040 acres, for a total of 32,188 acres for eight CRMAs. About 2.8 percent of the CRA would be protectively managed.

The overall impacts of Alternative D is that the additional acreage of SMAs would provide increased protection for cultural resources. Land acquisitions for Maroon Cliffs and the Pecos River/Canyons Complex would further protect the cultural resources in these areas.

Paleontological Resources

The impacts of designating and managing a 420-acre Dry Cave Research Natural Area would be the same as identified in Alternative B

Rights-of-way

Corridors

The effects of corridor designations and avoidance areas would be the same as Alternative C.

Avoidance Areas

The total acreage of avoidance areas would be 57,598 (2.6 percent of the CRA), an increase of 17,607 acres and 12 areas.

ACCESS ISSUE

Legal access rights for the general public or for BLM administration would be obtained in four access tracts where additional access is needed. Access restrictions for the purpose of resource protection would be implemented in 31 land tracts. No access acquisition or restrictions are proposed in the remaining 95 access tracts in this alternative.

Access acquisitions in four tracts would allow public use and BLM administration of SMAs, which would reduce user conflicts and increase efficiency in managing public lands.

Social and Economic Conditions

As livestock adjustments are implemented, incomes from livestock sale would increase as herd sizes are reduced. This income would be short lived and would rapidly fall due to decreased production.

In the long term, the amount of authorized grazing would return to appropriate current levels, and the level of employment would be the same. Returns to operators and the input into the regional economy would be at today's level.

With the exception of SMA #18, the impacts of this alternative is very similar to Alternative C. SMA #18 expands the NSO stipulation from 4,000 acres to 4,870 acres which precludes any development in the area.

ALTERNATIVE DI

The No Grazing Alternative was developed to analyze the affects of eliminating all domestic livestock from the 174 allotments totalling 965,000 acres west of the Pecos River. All other programs would be managed as described in Alternative D. All vegetation would be available for wildlife, watershed and aesthetics. Some vegetation, water facilities and gabions may be constructed or maintained to sustain or enhance wildlife or watershed management. Approximately ten years would be required to implement this alternative due to the extensive fencing required.

LAND TENURE

Impacts would remain the same as for Alternative D.

MINERALS AND ENERGY RESOURCES

Oil and Gas

Alternative DI would result in slight benefits for oil and gas production. Geophysical exploration and road and pad development costs would decrease because of fewer access conflicts or damages to livestock operations.

Leasable Solid Minerals

Potash

Potash would benefit from the elimination of livestock grazing by lessening surface user conflicts.

Other Leasable Solid Minerals

Prospecting permits for other leasable minerals would be easier to obtain.

Salable Minerals

The availability of salable minerals probably would not be affected by the elimination of grazing.

Locatable Minerals

The availability of locatable minerals probably would not be affected by the elimination of grazing from the public lands.

RANGELAND RESOURCES

Soil and Water

If livestock grazing were eliminated, soil compaction, reduction of litter, and organic matter, and deterioration of plant root structure, would decrease. Soil productivity, structure and permeability would improve and on site erosion rates would be decreased over the long-term.

An overall improvement in water quality would result from the elimination of grazing, because of the subsequent revegetation of riparian areas. Stream course channel stability would improve as scour and bank erosion decrease. Sediment discharges should decrease.

Vegetation

Under Alternative DI, changes in vegetative species composition would improve condition towards climax communities. Some poor vegetation condition sites could improve to fair, while some fair conditions sites could improve to good condition. However, some plant communities would probably not improve through natural processes.

Fire

Increases in mulch or dead plant materials are expected to show a dramatic, though unquantifiable, increase due to lack of consumption by livestock. This increased plant material could increase the incidence, size and intensity of range fires.

Livestock Grazing

Livestock use of public land totalling 216,369 AUMs would be eliminated in both the short- and long-term.

Wildlife Habitat

Conflicts between livestock and wildlife would be resolved under Alternative DI. Wildlife species which favor lower successional stage plant communities would decline, while species which favor higher successional stages could increase over the long term (100 years).

Eliminating livestock grazing would affect wildlife by increasing short-term forage availability and improving both the short- and long-term aquatic riparian habitat condition improvement.

Threatened and Endangered Species Habitat

Eliminating livestock grazing would result in potential short- and long-term improvements in habitat condition for Threatened, Endangered, and Sensitive species.

SPECIAL MANAGEMENT AREAS ISSUE

Recreation

In the long term, reduced maintenance on some existing improved roads could increase semi-primitive motorized recreation opportunties.

Hunting opportunities for big game would increase initially, then gradually decline.

Cave Resources

Impacts on cave resources would be the same as for Alternative D, except for the Chosa Draw Caves Complex, where eliminating grazing would eliminate contamination of the caves from livestock use in the area.

Visual Resources

Removal of existing range improvements would improve the apparent naturalness of landscapes west of the Pecos River.

Cultural Resources

Alternative DI would benefit cultural resources because trampling by livestock and vegetative treatments using herbicides would be eliminated.

ACCESS

Alternative DI would result in little impact to access.

Social and Economic Conditions

Eliminating livestock grazing from public lands would reduce total herd size by 56 percent, and would have a significant impact to livestock operators. Income from livestock sales would increase as herd sizes are reduced. However this increased income would be short-lived, and would fall rapidly as production decreases. Some self sufficient operators would have to become dependent upon an outside source of income, and some operations might be terminated entirely. Impacts to the regional economy and population levels would be less severe.

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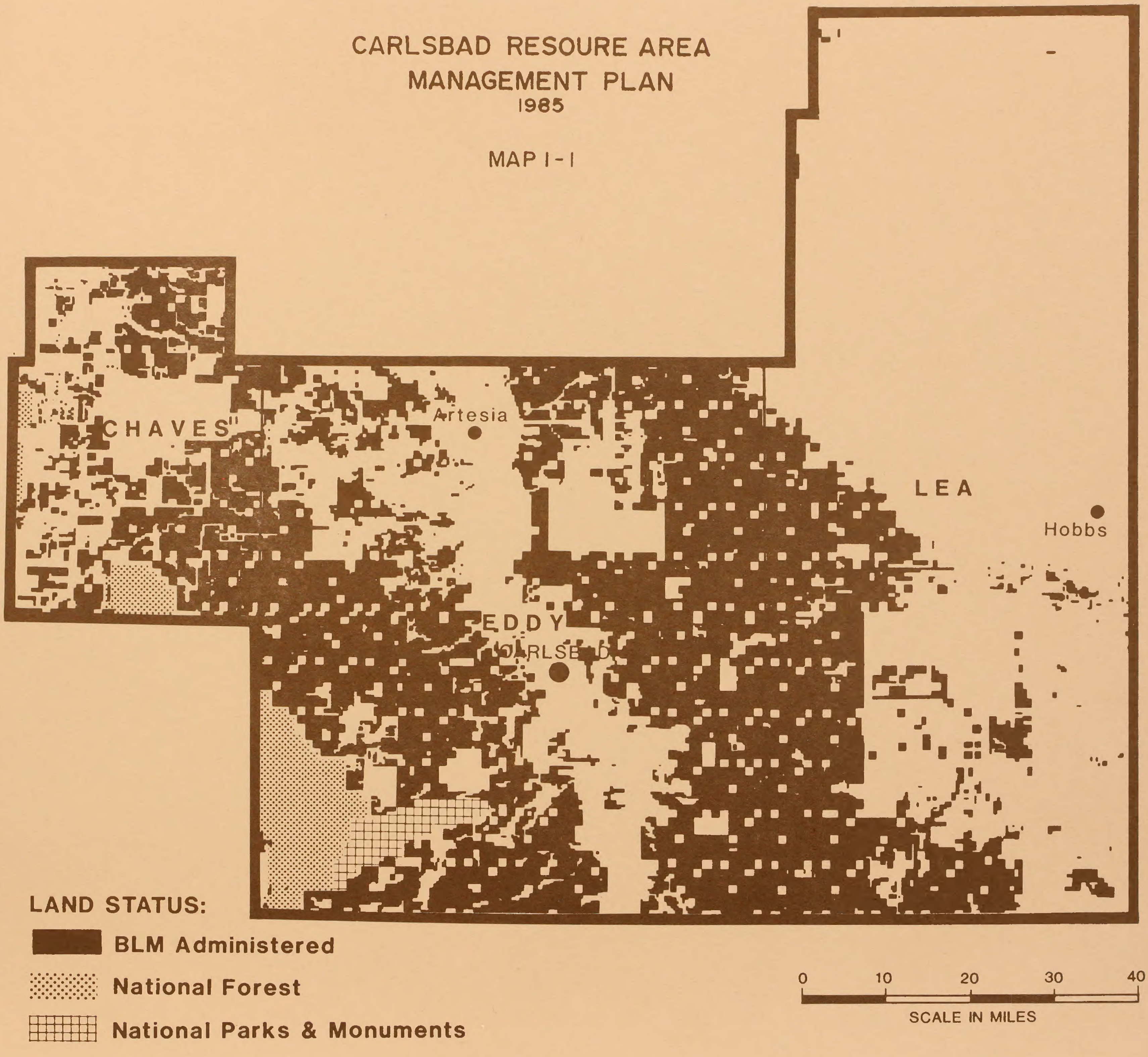
CHAPTER I

PURPOSE
AND
NEED

CARLSBAD RESOURE AREA MANAGEMENT PLAN

1985

MAP I-I



CHAVES
Artesia
EDDY
CARLSBAD
LEA
Hobbs
LAND STATUS:
BLM Administered
National Forest
National Parks & Monuments
0
10
20
30
40
SCALE IN MILES

PURPOSE AND NEED

The Carlsbad Resource Management Plan (RMP) provides a comprehensive framework for managing the public lands and for allocating resources in the Carlsbad Resource Area (CRA) for up to twenty years. It establishes land areas for limited, restricted, or exclusive uses. It identifies allowable resource uses and related levels of production or uses to be maintained, resource condition objectives, program constraints, and general management practices. The RMP identifies the necessary support actions, locations for detailed activity plans, and overall multiple-use objectives and management direction.

This document includes both a proposed RMP and a draft EIS which has been prepared in accordance with the Bureau of Land Management's (BLM) Planning Regulations [43 Code of Federal Regulations (CFR) 1600], the National Environmental Policy Act (NEPA) of 1970 and the Federal Land Policy and Management Act of 1976 (FLPMA).

Management Framework Plans (MFP) were previously completed for the East Eddy, Lea, Box Canyon, and Caverns Planning Units. The Carlsbad RMP/EIS incorporates applicable decisions from these plans. Livestock grazing was analyzed in the grazing EIS prepared by the Roswell District Office for the East Eddy/Lea MFP (BLM 1979) area. Decisions from the current planning documents are summarized in Appendix A.

LOCATION

This RMP encompasses all public lands with Federal surface ownership and Federal subsurface mineral estate within the New Mexico portion of the CRA (see Map 1-1). This includes about 2.2 million surface acres and about 2.7 million subsurface acres in Eddy, Lea, and a portion of Chaves County (see Table 1-1). Much of the public land is consolidated in large tracts, with State and private inholdings scattered throughout, except for public land parcels in eastern Lea County, along the Pecos River, and in the northwest corner of the CRA.

TABLE 1-1

SURFACE LAND OWNERSHIP, CARLSBAD RMP AREA

	County			
Landholder/Manager	Eddy	Lea	SW Chaves	Totals
BLM	1,374,018	431,249	305,279	2,110,546
Bankhead Jones Lands (L.U. land)	12,854			12,854
Withdrawn Land: 1/				
Bureau of Reclamation	36,000			36,000
Dept. of Energy; WIPP	10,240[2/]			10,240
Dept. of Defense; Gnome Site	640			640
State Militia	720			720
Living Desert State Park	1,200			1,200
State	477,730	873,748	115,862	1,467,340
Private	548,907	1,471,460	287,979	2,308,346
Total				5,946,886

Source: Range Survey (1977-78), Allotment Records, Master Title Plat (State Land Office) and East Roswell Grazing EIS.

1/ Withdrawals on lands which do not affect surface management are not shown on this table. See Minerals table for minerals withdrawals.

2/ Includes 9,600 acres pending Congressional Action for Withdrawal.

The CRA includes three physiographic divisions: the Guadalupe Mountains, the Pecos Valley, and the High Plains. Public lands adjoin the Carlsbad Caverns and Guadalupe Mountains National Parks and the Lincoln National Forest on the west, and extend to the Texas-New Mexico border in the east. The elevation decreases from the mountains in the west to the Pecos River and then gently rises from the river to the Texas-New Mexico border.

THE PLANNING PROCESS

BLM's planning process is designed to analyze and resolve issues and public concerns, while applying laws and policies established by Congress and the U.S. Department of the Interior. The process includes several mandated steps as established in 43 CFR 1600. For the Carlsbad RMP, these steps were applied to accommodate the unique resource management considerations of the CRA and the available data. The required steps are as follows:

1.) Identify Issues

This step sets the tone and scope for the multiple-use planning process by establishing the issues or land-use problems that need to be solved. The issue-oriented approach eliminates needless data gathering and focuses the analysis on expected conflicts or controversies.

2.) Develop Planning Criteria

Once the planning issues are identified, the next step is to develop criteria to clearly establish constraints and guidelines for analyzing information. Basically, this means stating for public review and comment what will be considered during the planning process. The planning criteria are intended to focus the planning effort, focus the collection and analysis of information, and facilitate subsequent analysis and decision-making. Both the issues and the planning criteria are included in this chapter.

3.) Inventory And Data Collection

Based on the issues and planning criteria, this step identifies the resource inventory needs and then the data are collected accordingly. Much of this information is geographically referenced and on maps. Issue-related resource, environmental, social, economic, and institutional data are collected for the completion of the planning process. Methods and procedures for collecting planning data and information are summarized in the Appendices.

4.) Management Situation Analysis

The Management Situation Analysis (MSA) describes how BLM is currently managing the resources. It identifies the output or production rates that result from current management, the demands for the resources, and the dependency upon public lands by the local and regional economies. Much of this information is graphically depicted on maps and overlays (available in the CRA files).

5.) Formulation of Alternatives

In land-use planning, as with other decision-making processes, there are always a number of alternatives. In this step the BLM manager sets out to accomplish three objectives which are:

> To identify a range of reasonable combinations of resource uses and management practices that respond to the planning issues and that provide management direction.
>
> To develop reasonable alternatives designed to provide a distinct choice among potential management strategies.
>
> To portray the complementary and competitive relationships among the various alternatives.

6.) Estimation of Effects of Alternatives

This step identifies the potential environmental, social and economic impacts of implementing each of the alternatives. Maps showing alternatives are compared (overlaid on the base maps and other data) to identify impacts resulting from each alternative. This analysis allows managers the opportunity to see different combinations of actions and to select the preferred alternative.

7.) Selection of Preferred Alternative

Based on the options presented in the alternatives and the potential impacts from each, BLM selects the combination of actions expected to be the most acceptable resolution of the planning issues. At this point, the Draft RMP and EIS are released for 90 days of public review and comment. The review may result in new information being presented, problems being pointed out in the BLM Preferred Alternative, or other alternatives being suggested.

8.) Selection of the Resource Management Plan

Based on the results of public review and comment, the Area Manager will recommend the proposed plan. It may be one, or a combination, of the proposed alternatives. The District Manager reviews the proposal, concurs or modifies, and submits the proposal to the State Director for review and approval. Upon approval, the proposed plan and associated EIS is printed and filed with the Environmental Protection Agency (EPA). A Record of Decision is prepared after a sixty-day Governor's Consistency Review and a thirty-day public protest period.

9.) Monitoring and Evaluation

This step involves the collection and analysis of long-term resource condition and trend data to determine the effectiveness of the plan in achieving the desired results. Monitoring continues until changing conditions require a revision of the RMP.

PLANNING ISSUES AND CRITERIA

This section lists the planning issues addressed in this RMP, followed by an explanation of criteria used for their evaluation.

A planning issue is a question which asks how a land use should be allocated. Planning criteria are guidelines used when analyzing those questions. The planning issues listed in this document have been identified by BLM, as well as by other Federal, State, and local government agencies. The concerns of private citizens and various interest groups, expressed in written comments and at public meetings, also helped in formulating the issues. Both the anticipated planning issues and the draft criteria were published for 30 days of public review and comment.

FLPMA is the basis for many of the criteria associated with the issues, and for much of the management guidance common to all alternatives. This act describes the general policy for management of public lands. Especially important to this planning effort is the directive that "management be on the basis of multiple use and sustained yield unless otherwise specified."

Planning criteria are derived from the laws and regulations as well as guidance found in BLM manuals and other directives.

ISSUE 1. LAND TENURE ADJUSTMENTS

This issue was presented to the public in the form of a question during the scoping process: "Which public land tracts would be retained, disposed, or studied further for possible disposal?"

BLM is mandated by FLPMA to identify in its land-use planning process those public lands which would best serve the public interest if retained in Federal ownership and managed for multiple use.

Small, scattered and isolated tracts are expensive and difficult to manage, and normally contribute little to the public land resource (See Map A in back cover pocket). Parcels close to urban areas are also in demand for community expansion. Disposal of these tracts often improves management efficiency by focusing efforts on larger tracts where BLM has more opportunities to meet its goals and objectives.

Acquisition of lands which would support BLM multiple-use management objectives is also considered under the land tenure adjustment issue. Lands acquired through purchase or exchange would become public lands.

Planning criteria for this issue are as follows:

The public lands shall be retained in Federal ownership unless it is determined through the planning system that disposal will serve the national interest [FLPMA, Section 102, and 43 United States Code (USC) 1701].

Public land may be made available for disposal through sales or exchanges. Transfers to other public agencies will be considered where either method may be permitted, based on applying the specific criteria for sales detailed in 43 CFR 2710.0-3 or exchanges as detailed in BLM Manual 2200 concerning exchange policy.

Disposal by sale may be based on any one of the following three criteria:

> Tracts which, because of location or other characteristics, are difficult and uneconomical to manage as part of the public lands and are not suitable for management by another Federal agency;
>
> Tracts which were acquired by BLM for a specific public purpose, but are no longer needed for that or any other Federal purpose; or
>
> Tracts or areas where disposal would serve important public objectives, including, but not limited to, expansion of communities, economic development, or other public objectives.

Other disposal factors include:

> Amount of public investments in facilities and the potential for recovering those investments;
>
> Cost of administration;
>
> Suitability of the land in question for management by another Federal agency;
>
> Significance of disposal or retention to local social and economic trends; or
>
> Impacts to any previously authorized land uses, cooperative agreements, and plans of other agencies.

The basic concept of land tenure adjustments is to consolidate administrative boundaries to create a more efficient and economical land ownership pattern. Areas for retention and disposal are identified on the Land Tenure Adjustments Map B in the pocket. In the retention area, title transfers of public land will be limited to minor acreages subject to case-by-case justifications; except unlimited exchange opportunities may be entertained to block Federal/non-Federal lands within the retention areas. Federal acreage within the retention zone will not decrease significantly. To reduce the impacts of split estate where practical, BLM may pursue mineral exchanges as authorized by FLPMA Sec. 209. Nothing in this RMP is intended to prohibit mineral exchanges conducted under BLM mineral exchange policy. In disposal zones, lands may be transfered out of Federal ownership by any of a wide variety of disposal authorities as long as all applicable sale or exchange criteria are met and there are no major conflicts with other resource management programs. There will be no title transfers of public lands within any Special Management Areas (SMA) under any authority. Non-Federal inholdings may be acquired by exchange or purchase if it is important to the management of an SMA.

ISSUE 2. MINERALS AND ENERGY RESOURCES

This issue was identified because of management concerns about potential conflicts between minerals activity on public lands and environmental protection responsibilities mandated by FLPMA. Production of oil, natural gas, and potash are significant uses and surface-disturbing activities associated with them sometimes conflict with other authorized land uses or other resource values. The minerals industry is concerned about the costs of complying with sensitive resource protection requirements, such as special stipulations, restricted access to leases and undeveloped areas, and public health and safety requirements.

In addition to managing the surface use of the public lands, BLM has recently assumed full management of the subsurface estate. This responsibility was transferred to BLM from the Minerals Management Service (MMS) in 1982. Prior to that time, "down-hole" and surface production was administered by MMS, while BLM managed leasing and reclamation.

BLM, as well as the petroleum industry and concerned public, recognizes that protection of subsurface formations which contain water, hydrocarbons, or cave formations is important. Because the State of New Mexico has jurisdiction of all water (surface and subsurface) BLM cooperates with the New Mexico Oil Conservation Division and the New Mexico State Engineer in establishing casing, cementing, and plugging procedures to prevent mixing between freshwater-bearing and hydrocarbon-bearing strata. These procedures are formulated during the "Application for Permit to Drill, Deepen, or Plug Back" (or APD process) and are attached to the permit. These casing, cementing, and plugging procedures will vary depending on the area (such as the Capitan Reef), and whether water is present or if the well is in a declared underground water basin. Appendix C-1 contains a generalized casing diagram and geologic columns in CRA.

The minerals and energy resources issue also addresses protection of significant plant and animal habitats, fragile soils, cultural resources and other values from damage or loss due to the surface-disturbing activities associated with the extraction of mineral commodities.

This issue was presented in the scoping process in terms of the planning questions to be answered and the decisions to be derived in the RMP:

Which public lands are suitable for mineral exploration and development?

Which public lands are not suitable for mineral exploration and development?

Where are additional operational constraints or reclamation standards needed due to other resource considerations?

The RMP categorizes areas of Federal mineral estate with oil and gas, potash, or other leasable solid minerals as:

Open for leasing and development with standard sitpulations;

Open with special stipulations, including "No Surface Occupancy" (NSO) stipulations; or,

Not open for leasing.

For salable mineral materials, the RMP identifies:

Areas where existing mineral material pits will continue to be open;

Areas where closure and/or reclamation of existing pits is needed to protect other resource values; and,

Areas where, because of distance or economic factors, new pits will be allowed.

Planning criteria for the minerals and energy resources issue is based upon the BLM policy to consider special mineral leasing stipulations only in instances where protection of surface resources, values, uses, or users are not sufficiently protected by the standard lease stipulations, regulations, or formal operational orders. In cases where proposed surface operations would have unacceptable environmental impacts, stipulations may be necessary and justifiable.

Other criteria for analyzing potential special stipulations include a determination that the existing uses or resource values cannot be adequately accommodated on other lands for the duration of operations, and that they provide a greater benefit to the public than the minerals. The analysis must indicate that less restrictive stipulations were considered but were rejected as not adequate to protect the public interest.

Stipulations developed through the planning process specify the reason for the stipulations, the land areas involved, and the probable impacts of the stipulations on lease activities. Stipulations also include a provision for waiver in the event that circumstances or resource values change, or that the lessee demonstrates that operations can be conducted without causing unacceptable impacts.

Except for existing withdrawals, public lands are available for exploration, mining claim location, and development under the 1872 Mining Laws and 43 CFR 3809 regulations. New withdrawals may be proposed to benefit land uses or other resource values.

ISSUE 3. RANGELAND RESOURCES

The principal consideration for this issue is the determination of management changes and/or adjustments in allowable livestock grazing use, if any, needed to reduce conflicts or competition with other uses of public lands. Decisions affecting grazing allotments east of the Pecos River were analyzed in the East Roswell Grazing EIS (BLM 1979) and will not be subject to further analysis in this document. As a result of the analysis of range inventory data, the public lands licensed for grazing use east of the Pecos were placed in one of three selective management categories along with allotments west of the Pecos. The procedures for selective management category determination are detailed in Appendix D. The categories may be changed based on additional resource data resulting from monitoring studies.

Rangelands, a term generally associated with livestock grazing, includes vegetation, wildlife habitats, soils, watersheds and the open space environments appreciated by outdoor recreationists.

Other elements analyzed under rangeland resources include brush control to enhance forage production, riparian habitats, loss of soil productivity, erosion, possible impacts to water quality, and reclamation procedures needed to maintain or improve grazing and other resource values in disturbed areas.

Planning criteria for rangeland resources is based upon the assumption that livestock will be managed to utilize available forage and maintain forage vigor without degrading wildlife habitat, watersheds, or range productivity. Selective management varies the level of inventory and the intensity of monitoring to correspond to the specific situations of the grazing allotments and to meet the following objectives:

> Ensure that the proper use level of the vegetation is not exceeded;
>
> Improve or maintain ecological condition and vegetative productivity in the long term (10-20 years);
>
> Improve wildlife habitat and watershed conditions; and,
>
> Ensure that future investments in rangeland improvements, treatments, and monitoring studies would be directed to grazing allotments with the greatest potential for improvement of wildlife habitat, watersheds, ecological condition, and forage production.

This plan also contains guidance for the habitat management for Threatened or Endangered (T&E) species on public lands under the rangeland resources issue.

ISSUE 4. SPECIAL MANAGEMENT AREAS

This issue addresses how BLM should manage sensitive portions of the CRA such as areas of high public use, potential Areas of Critical Environmental Concern (ACEC), caves, National Register Archaeological Districts, T&E plant and animal species habitats, and areas of resource management conflicts.

Some areas within CRA require special management attention. Sensitive resources such as archaeological sites, caves, or others with educational, scientific research or recreational values are often given special management without formal designations. However, specific areas which are so unique that it may be more important to manage them for a special use or user may be given a special designation. There are many designations available to BLM such as ACEC, Research Natural Area (RNA), Scenic Area, Cultural District, Special Recreation Management Area (SRMA), Outstanding Natural Area (ONA) and rights-of-way corridors.

SMAs have been identified through a variety of resource programs, each having its own criteria for identification and emphasis as a management priority area. Consequently, planning criteria vary by program or SMA affected.

The following are criteria for the resource programs involved with SMAs:

Areas of Critical Environmental Concern

This plan will identify and designate those areas which have unique resource values or conflicts and which require special management attention.

Fire Management

This plan will identify which areas require special fire management. Lands identified for some type of limited suppression or prescribed fire are determined by considering: safety of fire suppression personnel; management requirements of sensitive, unique, or unusual resource values; crucial or critical wildlife habitat; range improvement; recreational uses; public expectations and values; and fire management objectives of neighboring landowners and other responsible government agencies.

Public lands will be classified as full suppression areas unless specifically identified for limited or prescribed fire management and the appropriate fire plans are written and approved.

Recreation

Areas requiring intensive management to achieve BLM's recreation objectives and to provide specific recreation opportunities will be identified as SRMAs.

Areas with unusual natural characteristics where management of recreation activities is necessary to preserve those characteristics will be considered for special management or for designation as ONAs.

Off-Road Vehicles

BLM is required, through the planning process, to designate all public lands as either open, closed, or limited to off-road vehicle (ORV) use to protect fragile resources. In addition, there is a need to allow development of ORV use areas without damage to sensitive resources.

All public land will be designated as open to ORV use unless designated closed or limited to protect resources, or to promote the safety of all people using the public land, or to minimize conflicts between the various users of those lands.

Public lands currently or historically used for organized ORV events will be designated open for intensive ORV use if there are no significant resource protection needs, user conflicts or public safety problems.

ORV use related to valid mining claim operations will not be restricted, except by regulations and requirements found in 43 CFR 3809 as amended March 2, 1983. Certain roads in the CRA will be identified for closure or restricted uses.

Visual Resources

The RMP will also establish Visual Resource Management (VRM) class objectives on public lands.

Areas along highways, roads, trails or streams with high scenic quality or sensitivity may be designated as Scenic Areas.

Cultural Resources

The RMP may provide for the recognition and preservation of significant cultural and historical sites through such designations as National Register of Historic Places, or by prescribing special protective measures and/or research projects without identifying site locations. Site locations are not disclosed in the RMP to protect them from vandalism or theft.

Paleontological Resources

Vertebrate paleontological deposits are unique and nonrenewable resources which may be easily destroyed or permanently damaged. Protection of known paleontological sites will receive the highest attention through protection measures designed for specific sites.

Right-of-Way Corridors

Corridors

Designation of right-of-way corridors requires consideration of technical feasibility, public safety, and economic and security criteria. Existing right-of-way routes should be used for future alignments whenever feasible. Right-of-way alignments on public lands which have the fewest conflicts with critical resource values; e.g., erosion, wildlife habitat, and scenery, will be given priority consideration.

Avoidance Areas

The planning process provides an opportunity to identify public lands which should be avoided when routing future rights-of-way in order to protect sensitive resource values.

ISSUE 5. ACCESS

Developing adequate access to areas of public land, especially those having no legal access, is a widespread concern. In areas where there is mixed private, State, and Federal land ownership, some public lands are accessible only by traveling along roads on non-Federal lands. In situations where the roads crossing non-Federal lands are not public roads, the landowner can deny access. This often results in public land being isolated from general public use and BLM administrative access.

The planning issue presented to the public during scoping was:

> "How can the need for legal and physical access to public lands be balanced with the need to protect fragile resources and to minimize conflicts among different land users?"

This issue applies to virtually every user of the public lands and is of special importance to BLM in carrying out its multiple-use management responsibilities.

Planning criteria for the access issue includes the identification of areas of public land where:

> There are important resource values that are not available for multiple-use management due to the lack of legal access, and where access acquisition is a priority concern;
>
> Access restrictions are needed in order to protect other resource values and/or land uses;
>
> Access is adequate to accommodate existing or proposed uses and there are no resource-related conflicts;

The primary emphasis for this issue is to determine the relative importance (priorities) for obtaining additional access in tracts of public land, and seeking solutions on a priority basis; or

The emphasis for access restrictions were identified by other resource programs, and are included with this issue primarily for the purpose of comprehensively discussing access-related actions.

Appendix F-1 outlines the methodology used to analyze the issue. F-2 describes the proposed road policy, engineering standards and implementation procedures.

CHAPTER 2

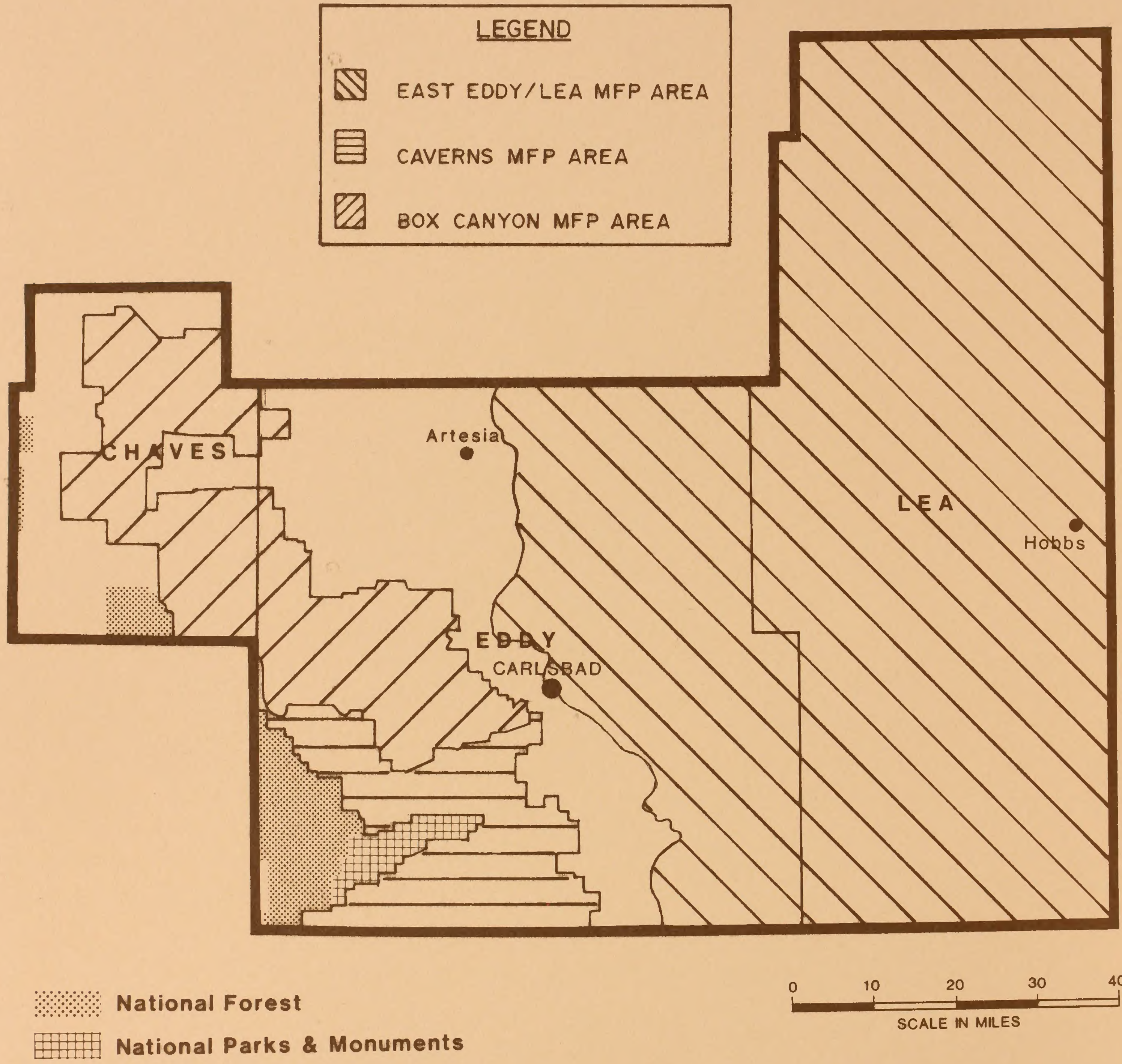
ALTERNATIVES

CARLSBAD RESOURCE AREA MANAGEMENT PLAN

1985

MANAGEMENT FRAMEWORK PLAN AREAS

MAP 2-1


LEGEND
EAST EDDY/LEA MFP AREA
CAVERNS MFP AREA
BOX CANYON MFP AREA
CHAVES
Artesia
EDDY
CARLSBAD
LEA
Hobbs
National Forest
National Parks & Monuments
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SCALE IN MILES

INTRODUCTION

This chapter is divided into two sections, "Continuing Management Guidance" and "Resource Management Plan Alternatives." The first section is a summary of basic management guidance that is unaffected by any alternative.

Four alternatives were developed as possible solutions to the issues. Each alternative presents a different blend and balance of resource allocations and emphasis. All four alternatives comply with the Federal Land Policy and Management Act (FLPMA) requirement that the public lands be managed by the principles of multiple use and sustained yield. Together with the continuing management guidance, each of the alternatives could be implemented as the Resource Management Plan (RMP).

Existing Management Framework Plan (MFP) decisions cover approximately 2 million acres of the Resource Area as shown on Map 2-1. This RMP will provide multiple-use planning for that area not previously covered, and will consolidate and update the existing management guidance. Those public land resources and programs not addressed specifically in alternatives would be managed as outlined in the following section on "Continuing Management Guidance".

The RMP alternatives are designed to provide a management framework for public lands. Specific actions will be detailed in activity plans with accompanying Environmental Assessments (EA). Activity plans will describe how a particular area or resource will be managed, and will comply with the allowable resource uses, levels of production, resource condition goals, program constraints, and general management practices documented in the RMP.

CONTINUING MANAGEMENT GUIDANCE

This section describes the current management practices that will continue regardless of alternatives. These practices are fundamental and are based upon laws, regulations, manuals, Executive Orders (EO), Secretarial Orders (SO), instruction memorandums, and existing planning documents. The East Roswell Grazing Environmental Impact Statement (EIS) (BLM 1979), and the East Eddy-Lea MFP (BLM 1979) provide guidance for the management of the Carlsbad Resource Area (CRA) east of the Pecos River.

Portions of the CRA west of the Pecos River are covered by the Caverns and Box Canyon MFPs (see Map 2-1). An analysis of existing multiple-use decisions is in Appendix A. When approved, the Carlsbad RMP will constitute the CRA's multiple-use plan and will supercede all previous land use planning.

LAND TENURE

Retention

FLPMA states that all public land be retained in Federal ownership unless disposal is in the public interest. Public lands may also be retained if the disposal is not in conformance with State, county, or local land use plans or zoning ordinances.

Public lands will be retained if cultural, paleontological, or other resources of national, State, or regional significance are found upon them, and the possible adverse effects of the disposal action cannot be mitigated at reasonable cost.

Public lands will be retained if they provide access to other Federal lands, unless access rights for public uses can be reserved in the patent.

Disposal

Any lands for disposal must be so identified through the Bureau of Land Management (BLM) approved land use planning. All lands identified for disposal must meet FLPMA criteria. Use authorization such as Recreation and Public Purpose (R&PP) leases will be considered for approval as they are received. Existing disposal areas authorized by management decisions include lands in the Loco Hills community area, the Waste Isolation Pilot Plant (WIPP) administered by the U.S. Department of Energy (DOE), scattered tracts in east Lea County identified for public sale or State exchange and those lands not classified for retention.

Any lands disposed of will be at or above fair market value (excluding lands disposed under the R&PP Act and the Color-of-Title Acts).

Lands identified for disposal which have no legal public access and only one adjacent landowner will be offered in non-competitive sales at fair market value.

There is a management objective to dispose of all existing R&PP sanitary landfills in order to divest BLM of liability for potential problems of hazardous waste dumping.

The Federal Government will retain all mineral rights, reservations for ditches and canals, and rights-of-way or easements if necessary when conducting disposals.

Where possible, public lands identified for disposal will be exchanged for non-Federal lands that have been identified for acquisition to support BLM resource management programs.

Public lands which contain valuable wildlife habitat but is otherwise suitable for disposal will be considered for exchange only with State or local agencies or nonprofit private organizations with wildlife management responsibilities, interests, and capabilities equal to or greater than those of BLM.

State surface land with Federal minerals would be a high priority for exchange in order to minimize the split estate acreage.

State, county, municipal, and qualified non-profit organizations will have the opportunity to obtain public lands identified for disposal under the authority of the R&PP.

Existing authorized permits, leases, rights-of-way, and licenses will be identified as valid existing rights. All disposals of public land will be subject to valid existing rights. Holders of valid permits or cooperative agreements covered by Section 4 of the Taylor Grazing Act will be reimbursed for financial investments they have made in rangeland improvements on public land if BLM disposes of the land. They would be reimbursed by the purchaser of the land.

Items to be examined while considering the merits of any disposal or acquisition action include:

1. Consistency and conformance with current planning
2. Threatened or Endangered (T&E) Plant/Animal Species and their habitat
3. Wilderness values
4. Prime and unique farmlands.
5. Floodplain/Flood hazard evaluation
6. Cultural and paleontological resource values
7. Visual resources
8. Areas of Critical Environmental Concern (ACEC)
9. Wetlands
10. Existing rights and uses
11. Controversy
12. Health and safety
13. Mineral resources
14. Adjacent uses and ownership
15. Air resources

Acquisition

There is a management objective to consolidate public land holdings in contiguous land ownership patterns. The land ownership patterns shown on Map A (in back cover pocket) may be adjusted through State exchange consistent with the Memorandum of Understanding (MOU) dated October, 1984, between BLM and the New Mexico State Land Office (SLO). Acquisitions to consolidate land ownership, public use areas, wildlife habitat, watersheds, land treatment areas, grazing administration, cultural values, and other resource management needs, would have priority.

Unauthorized Use

Unauthorized uses of public land will be resolved as quickly as possible through actions appropriate to the trespass in question.

This may include rehabilitation, fines, or both. Decisions on which actions to take will be based upon consideration of the following:

Type and significance of unauthorized use;

Degree of conflict with other resource values and uses;

Whether the unauthorized use was intentional or unintentional.

New cases of unauthorized use will be terminated immediately, unless it can be shown to the satisfaction of the authorized officer that immediate abatement will cause irreparable harm to the user.

Land Withdrawals

BLM policy is to keep the public lands open for public use and enjoyment. However, there are conditions which may warrant the removal of certain public lands from multiple use; e.g., public safety or protection of special uses and resources.

In an effort to keep as much of the public land open to the widest variety of uses, the BLM reviews existing withdrawals on a periodic basis. This review ensures that the reasons for the withdrawals are still valid and that the smallest acreage possible is retained in withdrawn status. Withdrawal reviews will be completed by 1991 for current withdrawals (see Pending Withdrawal Review, Appendix B-2). Upon revocating or modifying a withdrawal, all or part of the withdrawn land could be restored to multiple use management.

BLM policy is to minimize the amount of public land withdrawn, particularly from mining and mineral leasing, and where applicable, to replace existing withdrawals with rights-of-way, leases, permits, or cooperative agreements. Withdrawal applications will be reviewed to determine if formal withdrawal is needed.

For planning purposes it is assumed that the existing 640-acre WIPP site withdrawal will be increased to 10,240 acres by means of legislation.

Recreation and Public Purposes

Under the R&PP Act, BLM has the authority to lease or patent public land to governmental or non-profit entities for public parks, building sites, correction centers, or other public purposes. Applications are processed under the requirements of National Environmental Policy Act (NEPA) and are subject to public review.

Rights-of-Way

BLM grants utility and transportation rights-of-way, leases, and permits to qualified individuals, businesses, and governmental entities. Rights-of-way are issued where a public need is identified, and with stipulations which protect natural and cultural resources. Rights-of-way are also issued to promote maximum use of existing facilities, including joint use whenever possible. All alternatives will require using rights-of-way in common to the extent practical (FLPMA Section 503). Applicants will be encouraged to locate new facilities within existing corridors. All right-of-way actions will be coordinated with Federal, State, and local government agencies, adjacent landowners, and interested individuals and groups.

MINERALS AND ENERGY RESOURCES

Leasable minerals are managed under the authority of the Mineral Leasing Act of 1920, Mineral Leasing Act of 1926 and Potash Leasing Act of 1927. Leasable minerals present in the CRA include oil, natural gas, potash, sulfur, and sodium. Regulations that pertain to these minerals are 43 CFR 3100 for oil and gas, and 43 CFR 3500 for other leasable minerals.

Geophysical Exploration

A Notice of Intent (NOI) before entry on any public lands and a Notice of Completion upon any cessation of activity, must be filed with the Area Manager for any exploration.

Geophysical operations are addressed in 43 CFR 3045 and Onshore Oil and Gas Order #1.

Oil and Gas

Leasing of oil and gas in the CRA is in accordance with the Oil and Gas Leasing EA (BLM 1981) for the Roswell District. Regulations that have been issued as Orders or Notices to Lessees (NTL) concerning environmental and other factors associated with the drilling of oil and gas wells and the sale of oil and gas are listed below.

> Onshore Oil and Gas Order No. 1 (Approval of Operations on Onshore Federal and Indian Oil and Gas Leases) concerns requirements for an Application to Drill (APD) and well abandonment, including environmental reviews.
>
> NTL-2B concerns the disposal of produced water by injection into the subsurface, lined pits, or other acceptable methods.
>
> NTL-3A concerns pollution reports for surface discharges of oil, brine, and other liquids.
>
> NTL-4A concerns royalty or compensation for oil and gas lost.
>
> NTL-7 concerns regulating the means by which crude oil produced from jurisdictional lands is to be handled, stored, measured, removed, and reported.
>
> NTL 85-1 (New Mexico) concerns cultural resource surveys.

Produced brine water from oil and gas wells is disposed of in both lined and unlined surface pits and salt water disposal wells. Disposal is regulated cooperatively by the New Mexico Oil Conservation Division (NMOCD) and BLM. Disposal of produced brine water in unlined pits is allowed only in the area designated by the NMOCD and is described in Order No. R-3221-B. Disposal of produced brine water in lined pits is regulated according to NTL-2B, and is permitted in the CRA on a case-by-case basis (see Appendix C-3.3). Subsurface injection of produced brine water using an approved salt water disposal well must be confined to a geologic formation which contains water of similar or poorer quality than the injected water, or to a formation that contains water of such poor quality as to eliminate any practical use.

Federal mineral estate in the CRA will continue to be open for oil and gas leasing except for 11,680 acres of land withdrawals. These withdrawals remain the same for all alternatives and are the Gnome site (680 acres), the State Militia site (720 acres), the WIPP site (10,240 acres), and the Little Walt Canyon quarry site (40 acres).

Under all alternatives, the Federal oil and gas subsurface estate that is "Open to Leasing" will be leased with standard lease terms which may include special stipulations specifically designed for a particular area.

Lands leased with a no surface occupancy (NSO) stipulation contain sensitive resources that could be destroyed or severely damaged by oil and gas development: for example, the East Eddy/Lea MFP (BLM 1979) stipulates NSO on leases in areas nominated to the National Register of Historic Places. Lands leased with other special stipulations also contain sensitive resources.

Leasable Solid Minerals

Potash

Management of potash leasing is described in the Environmental Assessment Report (EAR) on Potash Leasing in Southeast New Mexico (BLM 1975) and the East Eddy/Lea MFP (BLM 1979).

Since the Department of Interior decided in 1951 to allow oil and gas leasing within the potash enclave, two Secretarial Orders (1961 and 1975) have been issued and a third update is expected to be signed. These Secretarial Orders allow the leasing and development of the same lands for both industries and BLM management attempts to minimize the conflicts between the two uses.

The area of conflict is defined in the Order of the Secretary of the Interior dated November 5, 1975 along with the management guidelines used to resolve problems. The State of New Mexico has defined the area of conflict and its guidelines for resolving problems in NMOCD regulations R-111A through N. These regulations are beyond the scope of this RMP to alter.

No special stipulations apply to potash leasing within the area contained in the SO other than those dealing with oil and gas. The standard stipulations on potash leasing were formulated and published in the Potash EAR.

NSO stipulations were implemented by MFP decisions in 1979 on Maroon Cliffs and Laguna Plata. These stipulations were appealed by one company, and the Interior Board of Land Appeals disallowed their imposition on the leases because the readjustment was ruled untimely. Potash leases are only readjusted at 20 year intervals. Court decisions make it unlikely that NSO could be placed on any existing potash leases. The NSO decision, if carried forward, would only apply to new leases in affected SMAs.

Other Leasable Solid Minerals

Other leasable solid minerals are managed under the authority of the Mineral Leasing Act of 1920 as amended. More specific guidance is found in 43 CFR 3500.

Sodium leases exist in the CRA. Sulphur prospecting permits have been issued since the 1960's and exploration still continues near the Yeso Hills.

Salable Minerals

Salable minerals are managed under the authority of the Mineral Materials Act of 1947 and the Common Varieties Act of 1955. Mineral commodities in the planning area include, but are not limited to, caliche, sand, gravel, and quarry rock.

Management for mineral materials is described in the Environmental Assessment for Mineral Material Sales and Permits in the Roswell District (BLM 1981). The East Eddy/Lea MFP (BLM 1979) authorizes continued mineral materials sales east of the Pecos River, with new pit locations to be determined on demand. New pits are opened only when there are no existing pits within a reasonable distance of the use location. Usually this distance is 3 miles for oil and gas caliche pits.

Applications for the removal of common variety mineral materials, including sand and gravel, will continue to be processed as they are received and stipulations to protect important resource values will be attached.

Locatable Minerals

All public land and mineral estate are open to mineral entry and development unless previously withdrawn. A formal withdrawal is required to close any area to location of a mining claim under the general mining laws.

Locatable minerals are managed under the authority of the General Mining Law of 1872 and subsequent regulations. These regulations include 43 CFR 3833 - Recordation of Mining Claims and 43 CFR 3802 - Exploration and Mining.

Mineral exploration and development on public land is regulated under 43 CFR 3800 to prevent unnecessary degradation of the land. Validity examinations of claims may be initiated where there is a conflict with a disposal application, or the land is needed for a Federal program, or where a mining claim is located under the mining law and unauthorized use of the land or mineral resource is occurring.

For those areas open to locatable minerals, BLM approval is not required to prospect for minerals or locate mining claims on public land. However, prior to developing mining claims, the mining claimant must notify the BLM Area office of the proposed operations. Disturbance of 5 acres or less does not require approval of the notice provided that power equipment is not used. Disturbance of more than five acres requires a plan of operations for approval. Both the notice and plan are requested under 43 CFR 3809, Surface Management of Public Lands.

Soil, Water, and Air

Soil, water, and air resources will continue to be evaluated on a project basis through the EA process. Evaluations will consider the significance of the proposed project and the sensitivity of soil, water, and air resources in the affected area. Stipulations will be attached as appropriate. This RMP does not propose any specific actions on soil, water or air.

FLPMA requires management of public lands to protect and enhance soil and water resources. Watershed activity plans will be developed and would include watershed treatments such as reseeding, or erosion and flood control structures. The primary objectives of these watershed treatments are to improve watershed values by reducing peak runoff rates, reducing erosion and sediment yields, improving water quality, and increasing onsite use of runoff in the long term.

Soils

Soils will be managed to maintain productivity and to minimize erosion. Under all alternatives, proposed surface disturbing projects will be analyzed to determine suitability of soils to support and sustain such projects. Projects on suitable soils will be designed to minimize soil loss. Projects proposed on unsuitable soils may be denied, or modified to mitigate soil imposed limitations, or moved.

Slopes 30 percent or more are susceptible to slumping or accelerated erosion when the surface is disturbed. Surface-disturbing activities on these slopes would be allowed only after considering site-specific conditions and the degree of disturbance that could be expected.

Reclamation of disturbed sites in sensitive areas may include, in addition to standard procedures, the following special procedures, as appropriate:

(1) Special site-specific seed mixtures
(2) Removal of caliche or other surfacing material
(3) Soil amendments, soil treatments, fertilizers
(4) Planting trees and shrubs
(5) Mulching
(6) Watering
(7) Erosion control and land treatments
(8) Fencing
(9) Special seedbed preparation and seeding methods

Current soils information will be used to support the various planning and multiple-use management activities. Soils management will include coordination with the related programs of State, local, and other Federal agencies.

Water

Water quality will be maintained or improved in accordance with applicable State and Federal pollution control laws and regulations. Federal laws include the Clean Water Act of 1977, EO 11752 (December 1973), and EO 11988 (May 1977). Requirements include consultation with State agencies on proposed projects that could significantly affect water quality.

Flood hazards will be evaluated in planning for facilities, land disposals, and other proposals, to reduce the risks of flood loss. If there are suitable alternatives, floodplain sites will be avoided (BLM 7221, Floodplain Management, EO 11988, Clean Water Act, PL 95-217 - 33 USC 466). Construction activities in rivers, wetlands or streams require a section 404 permit from the U.S. Army Corps of Engineers.

Water rights will be acquired or perfected as necessary to carry out public land management through State law and administrative claim procedures, except as otherwise specifically mandated by Congress.

Air

All activities will comply with applicable State and Federal air quality laws and regulations. Stipulations will be incorporated into project proposals to reduce air quality degradation.

The New Mexico Environmental Improvement Division (NMEID) has the primary responsibility for monitoring and enforcing air quality regulations and standards. The CRA is designated a Class II area indicating an area where extensive growth is allowed. Carlsbad Caverns National Park, which is adjacent to the CRA is classified as a Class I area indicating pristine air where no increase in air contaminant levels is allowed. The CRA is designated an attainment area which means that National Ambient Air Quality Standards (40 CFR50) are being met.

Chemical Vegetative Treatment

Several herbicides which are currently labeled by the Environmental Protection Agency (EPA) and approved by the New Mexico Department of Agriculture for use in the State of New Mexico are proposed for use in controlling brush. The goal of herbicide treatments is to decrease the target species, resulting in an increase in more desirable plant species.

All applications of herbicides will be under the supervision of a certified herbicide applicator and will be carried out in compliance with State and Federal laws. Application rates of herbicides will be determined based on individual range sites and the conditions at the time of application. Livestock use will be deferred for a minimum of two growing seasons following herbicide application. A site-specific EA will be prepared prior to vegetation treatments to determine the impacts.

If additional herbicides effective on mesquite or creosotebush are approved prior to the proposed vegetation treatment, they would be considered for use.

Livestock Grazing

The livestock grazing program is authorized by the Taylor Grazing Act of 1934, FLPMA, the Public Rangelands Improvement Act of 1978, and The Bankhead-Jones Farm Tenant Act of 1973. BLM's responsibility includes issuing grazing permits and leases, unauthorized use, allotment supervision, and other authorized actions. This involves approximately two million acres of public land within the CRA. The guidance established in the East Roswell Grazing EIS (BLM 1979), will be implemented and continue to be based upon long-term monitoring studies and will be accomplished through negotiation or by grazing decisions.

Tracts Unleased for Grazing

Approximately 5,000 acres of public land is unleased and will remain available for consideration for authorized grazing in accordance with BLM grazing regulations. (43 CFR 4110 and 43 CFR 4130) Any public lands leased for grazing in the future will be managed in accordance with the objectives of an approved land-use plan.

Allotment Categorization

All grazing allotments have been assigned one of three management categories based on present conditions, potential for improvement, other resource conflicts and opportunities for positive economic return on public investments (See Appendix D-1). Category M allotments generally are in satisfactory resource conditions. Category I allotments generally have the potential for improved resource conditions or have resource conflicts. Category C allotments generally have low potential for improvement and are producing near their potential.

Cooperative Management Plans

Cooperative Management Plans (CMP) will be developed in cooperation with the livestock operator and based upon allotment-specific management actions (see Appendix D-2), resource characteristics such as soil and vegetation potential and water availability, other land management objectives, operator needs, implementation costs, and general management actions (see Appendix D-3). Typical grazing plans available for consideration are described in Appendix D-4.

CMPs will be prepared for Category I allotments within constraints set by this RMP. These CMPs would specifically define the following:

Resource conflicts;

Management goals and objectives;

Level of management necessary to achieve the stated goals and objectives;

Planned rangeland improvements; and

Method of evaluation and monitoring.

The grazing systems are designed to meet management objectives and goals for each allotment. The grazing objectives would include, but not be limited to, desired changes in species composition, improved rangeland and watershed condition, accommodation of physiological needs of plants, consideration for wildlife values of riparian areas, big game habitat and endangered species habitat, and the realization of beneficial return of dollars expended in achieving the overall management objectives.

Monitoring

Initial stocking rates are based upon the best data currently available. Initial and potential carrying capacities have been estimated for each allotment by alternative (see Appendix D-6). A monitoring program will be established in the CRA to determine whether the goals and objectives of the RMP are being effectively achieved under current management. As a minimum, the monitoring studies will collect data on actual livestock use, wildlife use, degree of key forage species utilization, climatic conditions, and rangeland ecological condition and trend. When undesirable and unintended changes in resource values are discovered and the causes are determined, corrective action will be taken. Appendix D-5 describes rangeland monitoring.

Current BLM policy emphasizes the use of a systematic monitoring program to verify the need for livestock adjustments instead of using one-time inventory data.

Livestock Use Adjustments

Livestock use adjustments can be made by changing the kind and class of livestock grazing the allotment, the season of use, the stocking rate, or the grazing pattern. Future requests for changes in kind of livestock would be analyzed through EAs. While most livestock use adjustments will occur in Category I allotments, use adjustments may occur for allotments in Categories C and M, if resource conflicts arise.

The estimated initial stocking rates are not final stocking rates. Rather, all livestock use adjustments will be determined through monitoring and implemented through documented mutual agreement or by decision. When adjustments are made through mutual agreement, they may be implemented once the Rangeland Program Summary has been through a public review period. The Public Rangeland Improvement Act of 1978 (PL 95-514) outlines the Section 8 consultation policy.

The Federal regulations that govern changes in livestock forage provide specific direction for livestock use adjustments implemented by decision (43 CFR 4110.3-1, 43 CFR 4110.3-2, and 43 CFR 4110.3-3). The regulations specify that "permanent increases in livestock forage or suspensions of preference shall be implemented over a 5-year period, unless, after consultation with the affected permittees or lessees and other affected interests, an agreement is reached to implement the increase or suspension in less than five years."

Rangeland Improvements

Typical rangeland improvements are described in Appendix D-7. The extent, location, and timing of such actions will be based on the allotment-specific management objectives adopted through the Cooperative Management Plan (CMP) process, contributions from operators or others, and BLM funding capability.

All rangeland improvements will be subjected to an economic analysis to develop a priority ranking of allotments on which to commit the rangeland improvement funds. The highest priority for implementation generally will be assigned to those improvements for which the total anticipated benefits exceed cost.

When rangeland improvements are implemented on public land, BLM will adhere to procedures and design specifications to protect resources as mandated by laws, regulations, manual requirements, and policies. This RMP/EIS analyzes cumulative impacts of proposed rangeland improvements. However, prior to implementation, site-specific EAs will be prepared to more precisely analyze the impacts from individual projects.

BLM will conduct consultation procedures with the Fish & Wildlife Service (FWS) or the State of New Mexico for all actions that could have an effect upon endangered plant or animal species. The results of the consultation will determine the course of action necessary to avoid adverse effects on listed species or their habitats.

Watering facilities, fences, and cattleguards constructed primarily for livestock will be routinely maintained by permittees unless specific arrangements are made to the contrary. Permittees will make periodic inspections, conduct routine maintenance, and report major damage or malfunction. Disturbance of vegetation at all project sites will be held to a minimum. Nonstructural improvements, such as prescribed burns or brush control, will be maintained by BLM.

Wildlife Habitat

The wildlife program manages habitat for all forms of aquatic and terrestrial wildlife on public lands, and is concerned with:

> Protecting and managing habitats of State and Federally listed T&E plants and animals.
>
> Giving special attention to aquatic, wetland, riparian, and floodplain areas, and to special habitat features such as water holes, caves, groves of trees, cliffs, and ledges.
>
> Maintaining habitats to support viable, self-sustaining populations of wildlife in balance with habitat capacity in cooperation with the New Mexico Department of Game and Fish (NMDG&F).
>
> Ensuring that animal damage control is carried out in a systematic manner which responds to resource protection, human health, and livestock protection needs while protecting public safety, domestic animals and nontarget wildlife.

Fish and wildlife habitat will continue to be evaluated as a part of project level planning. Evaluations will consider the significance of the proposed project and the sensitivity of fish and wildlife habitat in the affected area. Stipulations will be attached as appropriate to assure compatibility of projects with management objectives for fish and wildlife habitat. Habitat improvement projects will be implemented where necessary to stabilize and/or improve unsatisfactory or declining wildlife habitat condition. Such projects will be identified through Habitat Management Plans (HMP).

Reintroduction or transplants of native animal species on public lands will be conducted only on highly suitable habitat for species of concern. Specifically, pronghorn antelope reintroduction guidelines will follow the model formulated in the Roswell pronghorn study (New Mexico State University 1983) and will be conducted in cooperation and according to NMDG&F regulations and State laws. Transplant or stocking of exotic animal species will be discouraged on BLM lands but may take place under special circumstances.

Forage will be provided for big game species populations as established jointly with the NMDG&F. It is assumed that game cover requirements will be met by limiting utilization of vegetation by domestic livestock.

Rangeland improvements will be designed to permit use of, and escape by, wildlife species. BLM controlled water sources will be available year-long for wildlife use. The 62 existing game water developments will be maintained either by BLM or by cooperative management agreements. New fences will be constructed according to the guidance contained in BLM New Mexico State Office Manual Supplement 1737, which includes designs to permit free movements of big game animals in occupied or historic ranges. Existing fences will be modified, as the need is identified in activity plans, to conform with BLM New Mexico State Office Manual Supplement 1737.

Vegetation treatment projects will be designed to minimize impacts on wildlife and to improve habitat whenever project and wildlife objectives are compatible. Seasonal restrictions are sometimes necessary for site-specific activities, such as not allowing an action to occur within a specific area during raptor nesting season. Seasonal restrictions will continue to be applied where they are needed to mitigate the impacts of human activities on important seasonal wildlife habitat. The major types of seasonal wildlife habitat and the time periods during which restrictions are needed are shown in Table 2-1.

Management actions within floodplains and wetlands will include measures to preserve, protect, and if necessary, restore the natural functions as required by EO 11988 and 11990. Degradation of stream banks and loss of riparian vegetation will be minimized to ensure their protection.

Recent aquatic/riparian management guidance from the U.S. Department of Interior (USDI) emphasizes greater protection of the resources. As a result, additional inventory needs identified are the classification of all aquatic/riparian areas on or adjacent to public lands. Monitoring efforts should also be established to determine the impacts of livestock, mineral industry, and recreation upon these resources.

Threatened or Endangered Species Habitat

BLM will ensure that actions authorized, funded, and carried out do not jeopardize the continued existence of Federally or State listed T&E species nor result in destroying or modifying officially listed critical habitat according to Federal and State laws. Necessary mitigative measures will be developed in consultation with the necessary agencies. Whenever possible, management activities in the habitat for Threatened, Endangered, or sensitive species will be designed to benefit those species.

Federally listed species will be protected as described in Recovery Plans. State listed species will be protected through Cooperative Agreements with the NMDG&F.

SPECIAL MANAGEMENT AREAS

Areas of Critical Environmental Concern

Currently there are no ACEC designated in the CRA.

Fire Management

BLM will continue to participate in the Joint Powers Agreement between the State of New Mexico and the United States Departments of Agriculture and Interior which provides for mutual wildland fire assistance.

Fire on public land will be managed according to one of two fire response levels--full or limited. Table 2-2 shows the areas and number of acres proposed for limited suppression. Limited Suppression is the policy which allows fire suppression activities to be dictated by prescribed fire parameters; i.e., temperature, fuels, wind, humidity, etc., to meet natural resource management objectives. Some areas may also have restrictions on the types or intensities of fire suppression activities allowed; e.g., equipment restrictions, in order to protect other resource values. Fire management plans will be written for limited suppression zones.

TABLE 2-1

SPECIAL STIPULATION: SEASONAL RESTRICTION ON OIL AND GAS DRILLING

SMA No.	Special Management Area	Units of Measure	Alternative A	 B	 C	 D and DI
4	Dark Canyon	Period	-0-	-0-	4/1 to 9/15	4/1 to 9/15
		Acres			730	730
13	Los Medanos Raptor Area	Period	-0-	4/1 to 12/30	4/1 to 12/30	4/1 to 12/30
		Acres[1/]		89,360	89,360	89,360
14	San Simon Swale Pronghorn Habitat	Period	4/15 to 6/15			4/15 to 6/15
		Acres	25,000	-0-	-0-	25,000
15	Phantom Banks Heronries Area	Period	-0-	4/1 to 7/30	4/1 to 7/30	4/1 to 7/30
		Acres[2/]		26,800	26,800	26,800
Total Acres		Acres	25,000	116,160	116,890	141,890

[1/] 89,360 is total acreage of Los Medanos Raptor Area; seasonal stipulation would apply to operations within .25 mile of nest sites, or, about 126 acres per active nest site.

[2/] For heronries within the 26,800-acre Phantom Banks SMA. Alternatives B and C could stipulate .25 mile distance separation for 126 acres per site; Alternative D stipulates a .5 mile distance separation for 502 acres protected per site. Acreage would change as number and location of heronries change.

Specific boundaries and prescriptions will be designated to meet the identified objectives of the areas. All other areas will be under full suppression. Full suppression is aggressive action by forces sufficient to contain the fire by 10 a.m. of the day following ignition.

The CRA will continue to carry out the basic suppression policy of initial attack of all wildfires on or threatening public land with the objective of containing the fire during the first burning period. This policy is implemented unless specific fire management plans are prepared and approved in advance. These plans define the conditions in which a wildfire will be declared a modified suppression fire. Crew safety, along with economic factors, is normally the principal objective in designating an area for limited suppression.

Prescribed burns are conducted as part of range, wildlife, and watershed protection and/or improvement projects. These burns are analyzed on a project basis in compliance with NEPA. All prescribed burns are proposed in the various approved Allotment Management Plans (AMP), HMPs, or Watershed Protection Plans. Within natural prescribed fire areas a fire may be allowed to take its natural course once it has been determined to be within prescription.

Plans will be written within constraints established by the RMP before any prescribed burning occurs, and analyzed through the EA process.

Recreation

BLM's objective is to provide a wide range of recreation opportunities to the public. Planning for recreational resources is guided by the Recreation Program Strategy as set forth in BLM Washington Office Instruction Memorandum No. 82-325, BLM Cave Management Policy Washington Office Instruction Memorandum No. 84-541, and the BLM Recreation Program Policy. BLM also coordinates with other Federal, State, and local planning including the Statewide Comprehensive Outdoor Recreation Plans (SCORP) developed under the Act of September 3, 1964 (78 Stat. 897) [FLPMA, Section 202(C)19]].

The existing boat ramp at Red Bluff Reservoir will be maintained and the three existing trails will be maintained at minimum standards.

Management objectives in the Special Recreation Management Areas (SRMA) will include developing facilities and intensive visitor management. Where recreation is not the principal management objective, management direction will provide for access, visitor information and protecting resources from user damage.

Under all alternatives, Recreation Area Management Plans (RAMP) will be prepared for designated SRMA. These RAMPs will address levels and types of management actions necessary to achieve the recreation objectives in the RMP.

Off-Road Vehicle

The use of off-road vehicles (ORV) on public lands will be controlled and managed to protect the resources of those lands, to promote the safety of all users of those lands, to minimize conflicts among the various uses of those lands, and protect critical and fragile resource values.

Areas not designated as limited or closed will be designated as open for ORV use. Emergency ORV designations could be implemented in problem areas, if necessary.

Pope's Well Historic Site (40 acres) and Pierce Canyon (1,215 acres) will be designated closed to ORV use in all alternatives. Vehicle use in the Maroon Cliffs cultural area will remain limited to designated routes.

Areas for competitive events and intensive use will be provided. The area around Hackberry Lake would continue to be available for organized ORV events. ORV events are examined through the NEPA process.

TABLE 2-2

LIMITED FIRE SUPPRESSION AREAS

Location	Approximate Acres by Alternative			
	A	B	C	D and DI
Special Management Areas:				
1 Seven Rivers Hills	540	540	540	540
2 Caves Resources:				
2(a) McKittrick Hill Caves Complex	-0-	3,440	4,920	4,920
2(b) Lost Cave	-0-	10	20	20
2(c) Fence Canyon Caves Complex	-0-	300	340	360
2(d) Little Manhole/Big Manhole Caves	20	100	100	100
2(e) Yellowjacket/Lair Caves	-0-	260	260	260
2(f) Chosa Draw Caves Complex	-0-	720	2,200[1/]	2,360[1/]
2(g) Mudgetts/Little Mudgetts Caves	30	50	50	50
2(h) Honest Injun Cave	-0-	10	10	10
3 South Texas Hill Canyon	-0-	---	1,360	1,960
4 Dark Canyon	2,941[4/]	3,950	3,950[1/]	3,950[1/]
5 Lonesome Ridge	3,342[4/]	2,990	2,990	2,990
6 Springs Riparian Habitat:				
6(a) Bogle Flat Spring	-0-	3	3	5
6(b) Preservation Spring	-0-	10	10	20
6(c) Cottonwood Spring	-0-	30	30	30
6(d) Owl Spring	-0-	15	25	25
6(e) Ben Slaughter Draw	-0-	205	205	375
6(f) Blue Spring	-0-	160	160[1/]	160[1/]
7 Yeso Hills	-0-	5,460	5,460	5,460
8 Bluntnose Shiner Habitat	-0-	200	200	200
9 Little McKittrick Draw	-0-	100	500	500
10 Laguna Plata	-0-	3,360	3,360[1/]	3,360[1/]
11 Maroon Cliffs	-0-	12,423	12,423[1/]	12,423[1/]
16 Poco Site	-0-	51	51	51
17 Bear Grass Draw	-0-	320	1,780	3,040
18 Pecos River/Canyons Complex	-0-	4,390	5,190[1/]	5,190[1/]
19 Pope's Well	-0-	40	40	40
20 Guadalupe Escarpment Scenic Area	-0-	8,820[3/]	49,570	49,570
23 Pecos River Corridor	-0-	5,880	5,880	5,840
West Carlsbad Limited Fire Suppression Area[2/]	-0-	117,765	135,605	134,855
Devil's Den Canyon	320[4/]			
McKittrick Canyon	200[4/]			
TOTAL ACRES	7,393	231,602	237,232	238,664

[1/] Acreage excludes nonpublic land proposed for acquisition.

[2/] Acreage represents all BLM administered surface land located west of the Pecos River, excluding SMA acreages (listed separately). Buffers around developed facilities would be designated as full suppression.

[3/] Zone I, only.

[4/] Acreage reflects public lands presently managed under Wilderness Interior Management Plan guidance. Also refer to Chapter 2, Continuing Management Guidance, Wilderness.

Visual Resources

Proposed activity projects are evaluated for consistency with Visual Resource Management (VRM) objectives and may be modified to blend with the characteristic landscape or be denied if visual contrast is excessive. The impacts of each development or treatment will be determined in site-specific EAs prior to implementation. The EA will consider the significance of the proposed project, the visual sensitivity of the affected area, and the impacts of the project. Stipulations will be attached as appropriate to ensure compatibility of projects with management objectives for visual resources. The goal is to minimize impacts to a degree that is compatible with the VRM objective for the area in which the activity occurs.

Cultural Resources

Cultural resources will continue to be inventoried and evaluated prior to surface disturbing activities. Attempts will be made to avoid adverse impacts to the cultural resources. Where avoidance is not possible, mitigation measures will be developed based on the cultural use evaluation system and in consultation with the State Historic Preservation Officer (SHPO) as required by the Programmatic Memorandum of Agreement with the Advisory Council, SHPO and BLM. Conflicts will be resolved in accordance with 36 CFR 800 and the Memorandum of Agreement between the New Mexico SHPO and BLM.

The following statutory and policy guidance for cultural resource management establishes direction and management objectives which guide BLM multiple-use activities on the public lands:

> Identify, evaluate, and protect those sites which meet National Register criteria. (EO 11593, 36 CFR 800, National Historic Preservation Act of 1966 as amended 1976 and 1980, PL 89-665, Historic Sites Act of 1935)
>
> Use caution until such inventory, evaluation, and designation procedures are completed for all lands within the referenced jurisdiction. (EO 11593, Historic Preservation Act of 1966, as amended 1976 and 1980, Archaeological and Historical Preservation Act of 1974).
>
> Preserve important historic, cultural, and natural aspects of our national heritage (NEPA 1969).
>
> Manage cultural resources to avoid inadvertent loss or destruction and protect the cultural values managed by BLM [BLM Policy 8100, Antiquities Act of 1906, Archaeological Resources Protection Act of 1979, FLPMA, Section 102(a)(8), 103(a)(c), 201(a), 202(a)(c)(1)(3)(9), 302(b), 303].
>
> Maintain a sensitivity and awareness of sites, places, and objects that may be sacred to American Indians (American Indian Religious Freedom Act of 1978).

Cultural Resource Management Plans (CRMP) will be developed for Maroon Cliffs, Laguna Plata, Pierce Canyon, the Poco site, Bear Grass Draw, Pope's Well, and the Potash Bull Wheel. Management direction will emphasize the preservation, management, and use of the cultural resources found within these areas. Emphasis will be on protecting the soils and vegetation to enhance the natural environment of the areas and the cultural resource settings. Mineral resources may be developed under existing laws, policy, and regulations provided that existing cultural resource values are protected. Other resource and land management activities would be managed to avoid conflicts with cultural resources. Site-specific actions will be determined when the CRMPs are developed and EAs are completed.

Completion of cultural resources Class I overview report and the Statewide Data Synthesis Project would continue to have a high priority.

Paleontological Resources

Paleontological sites will be managed to protect their scientific and educational values. Dry Cave will be managed specifically for the significant paleontological resources found there under all alternatives.

Rights-of-Way

Corridors

Public lands can be classified as rights-of-way corridors to protect environmental and social values while optimizing economic efficiency. The previous planning designated 5 corridors extending approximately 185 miles (see map 2-2) within which the public lands are available for utility and energy transportation facility development.

The existing corridors would be applicable to all alternatives and new corridors would not be proposed.

Avoidance Areas

Public land with highly sensitive resources will be managed as avoidance areas. Avoidance areas will be generally unavailable for utility and transportation facility development. Exceptions may be granted if the proposed facility benefits or does not impact the resource that formed the basis for identifying the area.

ACCESS

Development of additional transportation routes will primarily occur due to resource development actions by industry, or upon application by users. All roads on public land that are managed by BLM must meet appropriate BLM road standards, whether or not they are constructed by BLM initiative. Road construction standards would be no higher than necessary to accommodate their intended functions, and maintenance would be the amount necessary to ensure use. Road standards may vary from unimproved routes that can only be used by four-wheel drive vehicles, to improved roads that are usable by sedans and all types of vehicles see Appendix F for typical road standards.

Privately developed roads may be authorized with a right-of-way or other appropriate form of authorization such as a lease, permit, or cooperative agreement. Maintenance responsibilities and standards for existing roads will be established as part of comprehensive Transportation System Management Plans that will be developed for each county in the CRA.

BLM actions that enhance access to public lands could include the following methods for each alternative:

Land exchange;

Acquiring easement

Construction and minor re-routes to avoid non-Federal lands;

ORV designations that allow cross-country travel by vehicles;

Coordinating road system development with other land managing agencies;

Agreements with non-Federal landowners;

new resource development roads to be located on public lands to avoid ownership blockages; and

public land boundary signs, route marker signs, and directional signing.

Activity plans will be prepared prior to implementing management decisions in areas where additional access would be acquired.

Access restrictions in support of Special Management Areas (SMA) would occur in all alternatives.

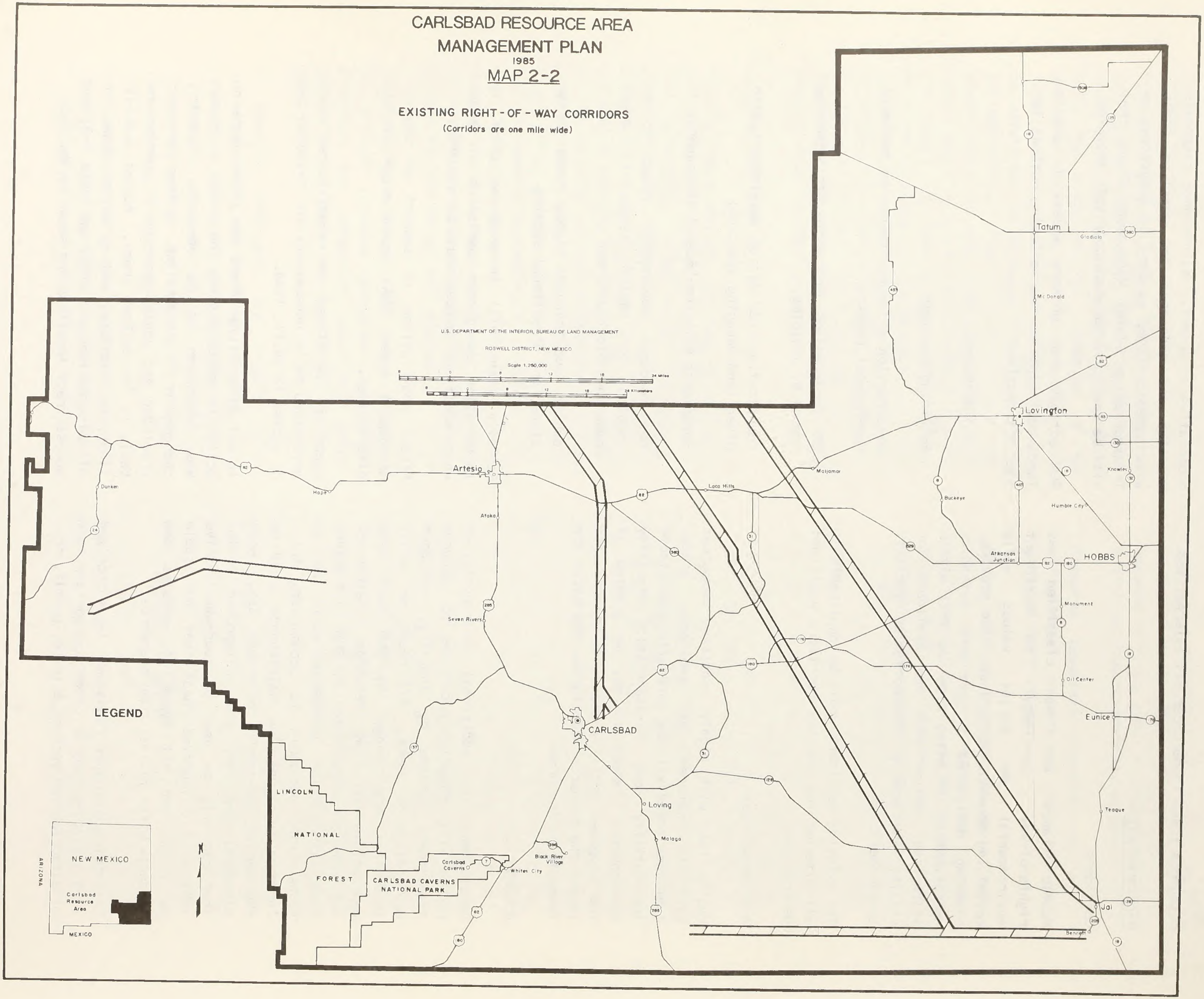
Roads will be closed and rehabilitated where determined to be unnecessary for resource use or access to public land.

In all alternatives there are areas where no action is proposed since the amount of access was determined to be adequate. However, changes in transportation systems are not precluded and could occur on a case-by-case basis in "no action" areas. Access acquisitions, restrictions, and no action areas for all alternatives are shown on Table 2-3, and access tract locations are shown on Map 2-3.

CARLSBAD RESOURCE AREA MANAGEMENT PLAN
1985

MAP 2-2

EXISTING RIGHT-OF-WAY CORRIDORS
(Corridors are one mile wide)


U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT
ROSWELL DISTRICT, NEW MEXICO
Scale 1:250,000

24 Miles
24 Kilometers
Tatum
Gladiola
McDonald
Lovington
Knowles
Humble City
Buckeye
Maljamar
Loco Hills
Artesia
Atoka
Hope
Dunken
Seven Rivers
Arkansas Junction
HOBBS
Monument
Oil Center
Eunice
Teague
Jal
Bennett
CARLSBAD
Loving
Malaga
Black River Village
Whites City
Carlsbad Caverns
CARLSBAD CAVERNS NATIONAL PARK
LINCOLN NATIONAL FOREST
LEGEND
NEW MEXICO
Carlsbad Resource Area
ARIZONA
MEXICO

BLM will continue its "Operation Respect" during hunting season program by providing maps and other access information to visitors, patrolling and monitoring visitation in high use areas and coordinating with the NMDG&F, SLO, and local law enforcement authorities to minimize access-related problems.

WILDERNESS

It is not within the scope of this RMP to assess wilderness suitability of public lands presently under wilderness review. The four Wilderness Study Areas (WSA), Lonesome Ridge, Mudgetts, Devil's Den and McKittrick Canyon, will be managed in accordance with the Interim Management Policy (IMP) and Guidelines for Lands Under Wilderness Review until officially removed from such protective management. This RMP would form the basis for managing these areas if they are not designated wilderness. Although proposals in Alternatives B, C, and D are contrary to IMP guidance, the IMP will supercede such proposals as long as the areas remain in wilderness review status. Mudgetts WSA will be studied as part of the New Mexico BLM Statewide Wilderness EIS. The three other WSAs will be jointly studied as a cooperative effort with Lincoln National Forest as part of their forest planning process.

TABLE 2-3
COMPARISON OF ACCESS ACTIONS BY ALTERNATIVES

	Alternative			
Access Element	A	B	C	D and DI
Tracts Identified for Additional Access:				
High Priority Tracts	-0-	1	6	4
Moderate Priority Tracts	-0-	-0-	11	-0-
Low Priority Tracts	-0-	-0-	8	-0-
Tracts Identified for Access Restrictions	4	19	22[1/]	31[2/]

Source: BLM Files

[1/] Twelve of the 22 access tracts identified for access restrictions also have portions identified for access acquisition. (1 high, 9 moderate, 2 low); therefore, the total tracts equals 43 and not 55.

[2/] Four of the 31 access tracts identified for access restrictions also have portions identified for access acquisition (4 high); therefore, the total tracts equals 27 not 31.

NOTE: See Appendix F; Table F-1

CARLSBAD RESOURCE AREA MANAGEMENT PLAN
1985

MAP 2-3

ACCESS TRACT LOCATIONS

LEGEND

- ACCESS TRACT BOUNDARIES

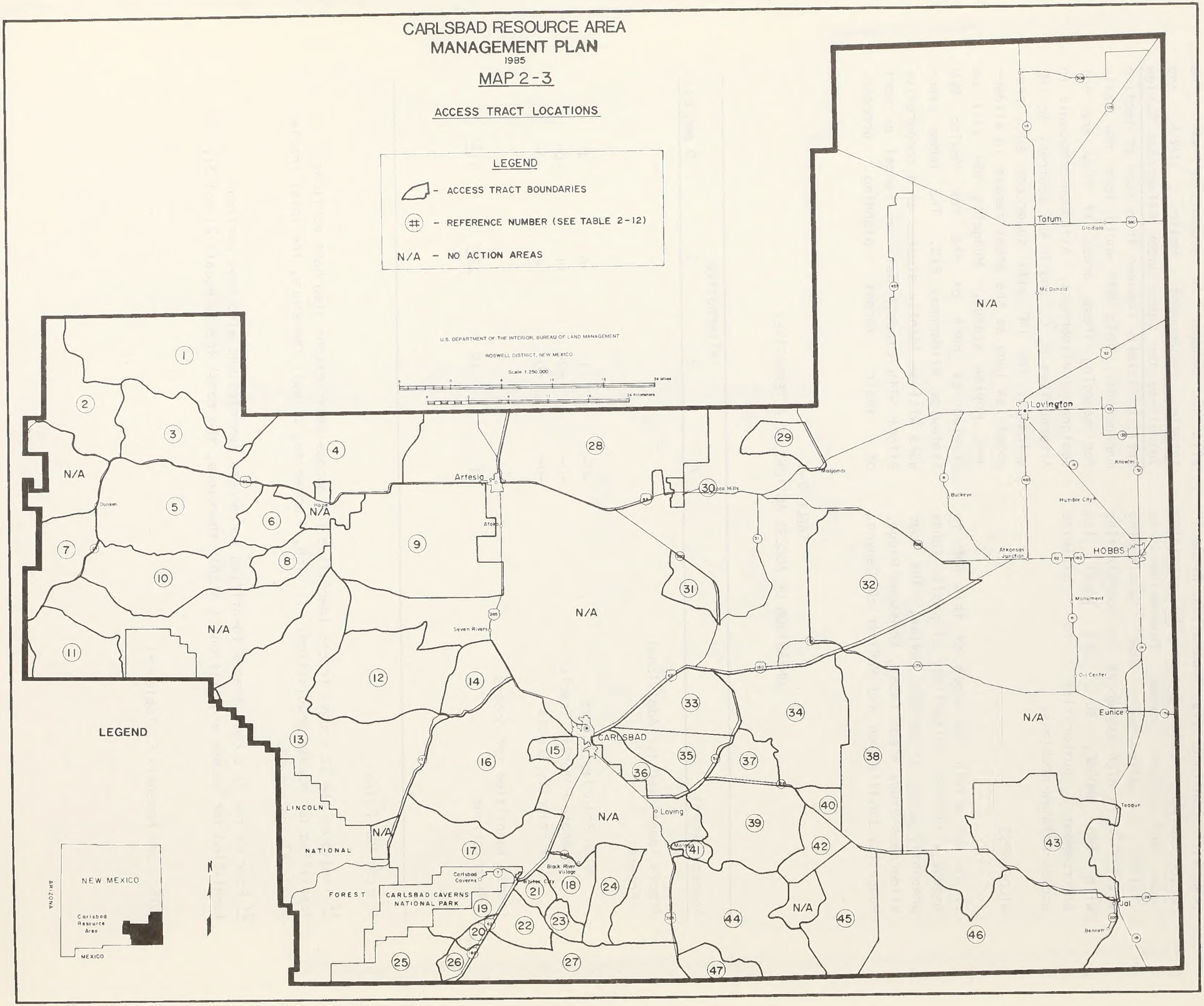
- REFERENCE NUMBER (SEE TABLE 2-12)

N/A - NO ACTION AREAS

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT

ROSWELL DISTRICT, NEW MEXICO

Scale 1:250,000



24 Miles
24 Kilometers
Totum
Gladiola
McDonald
Lovington
Knowles
Humble City
Buckeye
Maljamar
Loco Hills
Artesia
Atoka
Hope
Dunken
Seven Rivers
Atkansas Junction
HOBBS
Monument
Oil Center
Eunice
Teague
Jal
Bennett
CARLSBAD
Loving
Malaga
Black River Village
Whites City
Carlsbad Caverns
CARLSBAD CAVERNS NATIONAL PARK
LINCOLN NATIONAL FOREST
N/A
1
2
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LEGEND
NEW MEXICO
Carlsbad Resource Area
ARIZONA
MEXICO

ALTERNATIVE A

This alternative provides a baseline to compare the other alternatives with and describes the current levels of resource uses and protection.

LAND TENURE

Presently, about 47,262 acres would be considered for exchange with the State of New Mexico; 20 acres disposed for community expansion, and about 4,062 acres for private land exchanges or sales or the R&PP Act. Over a 20-year period, about 47,282 acres of public land could be disposed of, leaving 2,123,718 acres in Federal ownership.

However, when State exchanges are involved, BLM could acquire State land elsewhere in New Mexico. State exchanges may involve BLM lands of comparable value anywhere in the State. For example, State lands could be acquired in the Farmington Resource Area for Federal lands in the CRA.

Areas authorized for disposal in the East Eddy/Lea MFP (BLM 1979) include lands in the Loco Hills community and scattered public land parcels in east Lea County and east of Carlsbad. All other lands are identified for retention in public ownership.

MINERALS AND ENERGY RESOURCES

Oil and Gas

Under this alternative, the CRA would continue to be open for oil and gas leasing except for 11,680 acres of current withdrawals.

Pope's Well, Maroon Cliffs, Laguna Plata, the Living Desert State Park, and the Seven Rivers Hills Gypsum Buckwheat Area would continue to be protected by NSO stipulations. Special stipulations to protect cave resources and for wildlife habitat would continue. Oil and gas drilling in the Oil-Potash Area would continue to be subject to current policy and procedures. Special Stipulations for floodplains would continue.

Leasable Solid Minerals

Potash

Potash leasing and prospecting permit issuance would continue, except in withdrawn areas, subject to standard stipulations.

Other Leasable Solid Minerals

Prospecting permits would continue to be issued where warranted; other resources would not be lost during exploration. Approximately 11,600 acres are currently closed to mineral leasing.

Salable Minerals

Mineral material pits would continue to be opened with standard stipulations where needed, except in areas that are withdrawn or where protection is required by law. Pits no longer needed would be closed and rehabilitated as manpower and funding permit. Priority areas for closure would be T&E Species habitat and cultural sites eligible for National Register nomination. In some instances, material pits would not be rehabilitated if it would further damage cultural resource values.

Locatable Minerals

Federal lands within the CRA would be available for location of minerals under the General Mining Laws except within current withdrawals (See Table 2-4).

RANGELAND RESOURCES

Soil and Water

The highly erodable soils at Seven Rivers Hills and the fragile soils at Maroon Cliffs would be protected by existing NSO Stipulations.

Vegetation

Approximately 5,000 acres of existing vegetative threatments would be maintained by BLM. The treatments would consist of furrowing or grubbing.

TABLE 2-4
WITHDRAWALS FROM MINING CLAIM LOCATION

		Approximate Acres Federal Minerals by Alternative		
Location	A	B	C	D and DI
Special Management Areas:				
1 Seven Rivers Hills	-0-	540	540	540
2 Cave Resources:				
2(a) McKittrick Hill Caves Complex	400	600	755	755
2(b) Lost Cave	-0-	10	20	20
2(c) Fence Canyon Caves Complex	340	300	340	360
2(d) Little Manhole/Big Manhole Caves	-0-	100	100	100
2(e) Yellowjacket/Lair Caves	-0-	260	260	260
2(f) Chosa Draw Caves Complex	-0-	720	1,160[1,2]	1,160[1,2]
2(g) Mudgetts/Little Mudgetts Caves	-0-	50	50	50
2(h) Honest Injun Cave	80	10	10	10
5 Lonesome Ridge	-0-	2,240	2,990	2,990
6 Springs Riparian Habitat:				
6(a) Bogle Flat Spring	-0-	-0-	3	5
6(b) Preservation Spring	-0-	-0-	33	53
6(c) Cottonwood Spring	-0-	-0-	108	108
6(d) Owl Spring	-0-	-0-	15	25
6(e) Ben Slaughter Draw	-0-	165	205	375
6(f) Blue Spring	-0-	-0-	440[1,2]	440[1,2]
7 Yeso Hills	-0-	-0-	640	5,460
8 Bluntnose Shiner Habitat	-0-	200	200	200
9 Little McKittrick Draw	-0-	100	500	500
18 Pecos River/Canyons Complex	-0-	3,300	4,100[1,2]	5,190[1,2]
Gnome Site	680	680	680	680
WIPP Site	10,240	10,240	10,240	10,240
Little Walt Canyon Quarry Site	40	40	40	40
State Militia Parcel	720	720	720	720
Pecos River Project (Red Bluff Reservoir)	1,729	1,729	1,729	1,729
TOTAL ACRES (Federal Minerals)	14,249	22,004	25,878	32,010

[1] Acreage excludes non-Federal minerals proposed for acquisition.

[2] Acreage includes Federal surface/Federal subsurface minerals and non-Federal surface/Federal subsurface minerals.

Livestock Grazing

This alternative would continue current management on the twelve AMPs covering 200,000 acres (see Appendix D-8). Less intensive management would occur on the remaining 162 grazing allotments west of the Pecos River. The maintenance of existing rangeland improvements would require approximately $200,000 in rangeland improvement funds over a 10-year period.

Wildlife Habitat

Management of wildlife habitat would be emphasized for game species which are under the jurisdiction of the State. Seasonal oil and gas drilling stipulations and the 25,000-acre exclusion of domestic sheep or goats would continue in the San Simon Swale Pronghorn Habitat Area.

The six existing artificial water sources would be maintained to provide yearlong water for big game and birds. Twenty-five of the existing artificial water sources would be maintained by BLM and 37 bird water projects would continue to be maintained under a Cooperative Management Agreement (CMA) between the Carlsbad Sports- man's Club and BLM.

Unless specific problems or conflicts are identified, management for most wildlife habitats would mitigate potential impacts of other resource uses in order to maintain or allow gradual improvement of habitat.

Threatened or Endangered Species Habitat

The FWS recovery plan for the gypsum wild buckwheat critical habitat, located in the Seven Rivers Hills, would be implemented. Long-term monitoring studies would continue and the interim emergency ORV closure to prevent damage by vehicles would remain in effect.

SPECIAL MANAGEMENT AREAS

SMAs currently identified or proposed are displayed on Table 2-5. There would be eleven SMAs containing 49,580 acres of public land. Each SMA would have an activity plan developed for it. Management Actions for each SMA are described in Appendix E.

Areas of Critical Environmental Concern

There would be no ACECs under this alternative.

Fire Management

Current management direction would continue with limited fire suppression on 7,393 acres and with full suppression on the remainder of the CRA.

Recreation

A campground and day use recreation facility would be developed on a 120-acre site to accommodate water-based recreation use at Red Bluff Reservoir. Cooperation with Eddy County and NMDG&F to maintain access and a boat ramp at the site would continue.

Public lands would remain open for hunting, ORV use, and other recreational pursuits under Federal Regulations and State laws. Permits for competitive or commercial activities such as motorcycle enduros, dog field trials, and equestrian trail rides on a case-by-case basis.

Off-Road Vehicles

No new ORV use designations would be implemented in the CRA. All public lands except those areas designated by the existing MFPs and site-specific emergency closures would remain undesignated for motorized vehicle use.

The Laguna Plata Archaeological District (3,360 acres), the Pierce Canyon area (1,215 acres), and the Pope's Well Historic Site (40 acres) would remain closed to vehicle use. Maroon Cliffs Archaeological District (12,423 acres) would continue as a limited ORV designation (designated routes). An emergency closure for the Seven Rivers Hills (540 acres) would remain in effect.

TABLE 2-5
SPECIAL MANAGEMENT AREAS
PROGRAM EMPHASIS FOR ACTIVITY PLAN DEVELOPMENT

		Approximate Acreage by Alternatives[1/]			
Location	Emphasis	A	B	C	D and DI
Special Management Area:					
1 Seven Rivers Hills	Wildlife	540	540	540	540
2 Cave Resources[2/]	Rec/Cult/ VRM/Nat Hist	595	4,890	7,900	8,080
3 South Texas Hill Canyon	Wildlife	-0-	-0-	1,360	1,960
4 Dark Canyon	Rec/VRM	2,941	3,950	3,950	3,950
5 Lonesome Ridge	Rec/Wildlife/VRM	3,342	2,990	2,990	2,990
6 Springs Riparian Habitat	Wildlife	-0-	524	534	726
7 Yeso Hills	Soils/Water/ Wildlife	-0-	5,460	5,460	5,460
8 Bluntnose Shiner Habitat	Wildlife	-0-	200	200	200
9 Little McKittrick Draw	Wildlife	-0-	100	500	500
10 Laguna Plata	Cult.	3,360	3,360	3,360	3,360
11 Maroon Cliffs	Cult.	12,423	12,423	12,423	12,423
12 Potash Bull Wheel	Cult.	4	4	4	4
13 Los Medano Raptor Area	Wildlife	-0-	89,360	89,360	89,360
14 San Simon Swale Pronghorn Habitat	Wildlife	25,000	-0-	-0-	25,000
15 Phantom Banks Heronries Area	Wildlife	-0-	26,800	26,800	26,800
16 Poco Site	Cult.	-0-	51	51	51
17 Bear Grass Draw	Cult.	-0-	320	1,780	3,040
18 Pecos River/Canyon Complex	Rec/VRM/ Cult/Wildlife	1,215	4,390	5,190	5,190
19 Pope's Well	Cult	40	40	40	40
20 Guadalupe Escarpment Scenic Area	Rec/VRM	-0-	8,820[3/]	49,570	49,570
21 Alkali Lake ORV Area	Rec.	-0-	900	900	900
22 Hackberry Lake ORV Area	Rec.	-0-	55,800	55,800	55,800
23 Pecos River Corridor	Rec/Wildlife/Soils/ Water	120	6,000	6,000	6,000
TOTAL ACRES		49,580	226,922	274,712	301,944

[1/] Acreage does not include private/State lands proposed for acquisition for SMA numbers 2, 4, 6 (Chosa Draw Caves complex), (Blue Springs), 10, 11, and 18. Acreage does not include Federal minerals under non-Federal surfaces proposed for acquisition or other management prescriptions.

[2/] Includes Dry Cave paleontological site.

[3/] Zone 1, only.

Cave Resources

Cave management would continue under the existing interagency Memorandum of Understanding (MOU) between BLM, the National Park Service, and the Forest Service (FS). MOUs with the National Speleological Society (NSS) and the Cave Research Foundation (CRF) would continue. A CMA with these user organizations, and agreements with the FS to manage Trench Cave and the NSS Pecos Valley Grotto for Lost Cave would also continue.

Under this alternative, thirteen caves currently closed to public use except by special permits would remain gated and locked. Permits to use these caves would be issued and would include safety and resource protection stipulations. Less intensive visitor management would continue for unpermitted and ungated caves.

Visual Resources

Objectives for VRM established in the East Eddy-Lea MFP (BLM 1979) would continue, with Class II objectives along a portion of the Pecos River, and in the Pierce and Cedar Canyon area. The Maroon Cliffs, Livingston Ridge, Mescalero Ridge and the Salt Lake areas are designated VRM Class III and the remainder of the CRA east of the Pecos River is designated Class IV. Impacts to visual resources west of the Pecos River would be evaluated during the EA process.

Cultural Resources

Under current management, all surface disturbing activities require a cultural resource inventory prior to authorization. Consultation with the SHPO would be initiated if cultural resources are encountered. The actions listed under Continuing Management Guidance, including the MFP decisions, would be implemented under this alternative. Management of cultural resources would be emphasized at Laguna Plata, Maroon Cliffs, Pierce Canyon, Potash Bullwheel, and the Pope's Well.

Paleontological Resources

Dry Cave would remain gated. Restricted entry for authorized scientific research would be allowed. The oil and gas stipulation that restricts drilling (within 300 feet) and pit placement (within 600 feet) from known cave features would be applied. The withdrawal of locatable minerals in this area, which includes Dry Cave, would continue in affect.

Rights-of-Way

Corridors

Existing designated rights-of-way corridors totalling approximately 185 miles would continue to be used. Areas protected by law, such as archaeological sites, T&E Species habitats, etc., would continue to be avoided as determined necessary through the EA process.

Avoidance Areas

Existing right-of-way avoidance areas containing 7,398 acres would continue to be in force. This would affect .4 percent of public lands in the CRA.

ACCESS

BLM would retain existing legal and physical access and would work with the county governments to keep county roads open to public access.

There would not be a planned program directed at solving access problems on a priority basis under this alternative. Existing land use decisions summarized in Appendix A would be utilized, when available, to develop acquisition priorities. In other areas not covered by land use plans, access needs would be evaluated on a case-by-case basis. Access would be acquired as funding and manpower allow.

Five areas (contained within four access tracts) would continue to be restricted for vehicular access and are described under the Off-Road Vehicles section of this alternative.

ALTERNATIVE B

This alternative emphasizes production and/or consumption of resources. High priority would be given to programs which might improve economic conditions.

This alternative is more protective than Alternative A partially because of lack of planning on portions of the CRA and partially to ensure conformance with various laws, regulations, and policies. Consequently, this alternative provides the minimum acceptable level of resource protection while still having only minimal impacts on industry.

LAND TENURE

Implementing this alternative could result in the disposal of 220,700 acres of public lands from Federal ownership (about 10 percent of the CRA surface acres), leaving 1,950,300 acres retained under BLM administration. Land sales would emphasize production of commodities to meet resource use demands, with public sale being the preferred method of disposal over exchange or R&PP patent. Lands identified for disposal are scattered or isolated tracts that are difficult and uneconomical for BLM to manage, are not needed for BLM multiple-use programs, or which may be needed for community expansion.

All Federal lands may be consolidated through exchanges with other Federal agencies, the State of New Mexico, or for private lands as long as there is no net reduction of Federal land in the retention zone (See Map B in the map packet). Disposal of Federal lands within the retention zone will be allowed through use authorizations, such as R&PP patents, which are consistent with multiple-use management objectives for the area. Land sales within the retention zone will be discouraged, though not completely disallowed.

MINERALS AND ENERGY RESOURCES

Oil and Gas

In addition to management described in the Continuing Management Guidance Section, this alternative would increase the acreage of Federal subsurface mineral estate open for oil and gas leasing under special stipulations by 191,534 acres to a total of 552,237 acres. Tables 2-6, 2-7, and 2-1 list the areas that would be protected by special stipulations. Of the total acreage with special stipulations, 11,757 acres would be under the NSO stipulation.

Seasonal stipulations, including no drilling near active nests, would be imposed to protect 89,360 acres of raptor nesting habitat and 26,800 acres of great blue heron nesting habitat. Existing stipulations on 25,000 acres of the San Simon Swale Pronghorn Habitat area would be removed. Areas in which a restrictive seasonal drilling stipulation are applied total 116,160 acres. The periods and locations of the restrictions are shown in Table 2-1. Existing policy and guidance would be used to protect 100-year floodplains. Netting would be required on new salt water disposal pits to protect wildlife.

Any geophysical operations; i.e., seismic activities, conducted on public lands would comply with ORV designations and ensure protection of sensitive or fragile resources. As determined by BLM, a safety and resource clearance would be conducted prior to any geophysical operation. These are performed to ensure protection of fragile resources and to detect any hazards.

Leasable Solid Minerals

Potash

Areas not open to leasing (NOL) of potash and other solid leasables would be increased from the present 11,640 acres to 21,631 acres. Table 2-8 shows the areas affected. The rest of the CRA would remain open for leasing and development under standard stipulations.

Other Leasable Solid Minerals

As related above the acreage closed to prospecting and, therefore, leasing would be increased. Most of the acreage no longer open has low probability for mineral

TABLE 2-6
SPECIAL STIPULATION: RESTRICTED SURFACE DISTURBANCE [1]

Location	Approximate Acres by Alternative A	B	C	D and DI
Special Management Area:				
1 Seven Rivers Hills	540	540	540	540
3 South Texas Hill Canyon	-0-	-0-	1,360	1,960
4 Dark Canyon	2,941[2]	3,950	3,950	3,950[5]
5 Lonesome Ridge	3,342[2]	2,990	2,990	2,990
6 Springs Riparian Habitat:				
6(a) Bogle Flat Spring	-0-	3	3	5
6(b) Preservation Spring	-0-	33	33	53
6(c) Cottonwood Spring & Draw	-0-	108	108	108
6(d) Owl Spring	-0-	15	25	25
6(e) Ben Slaughter Draw	-0-	205	205	375
6(f) Blue Spring	-0-	160	160[5]	160[5]
7 Yeso Hills	-0-	5,460	5,460	5,460
8 Bluntnose Shiner Habitat	-0-	200	200	200
9 Little McKittrick Draw	-0-	100	500	500
10 Laguna Plata	3,360	3,360	3,360[5]	3,360[5]
11 Maroon Cliffs	-0-	12,423	12,423	12,423[5]
13 Los Medanos Raptor Area[4]	-0-	89,360	89,360	89,360
15 Phantom Banks Heronries Area[3]	-0-	26,800	26,800	26,800
16 Poco Site	-0-	-0-	51	51
17 Bear Grass Draw	-0-	320	1,780	3,040
18 Pecos River/Canyons Complex	-0-	4,390	5,190[5]	5,190[5]
20 Guadalupe Escarpment Scenic Area	-0-	8,820	49,570	49,570
23 Pecos River Corridor	-0-	6,000	6,000	6,000
Devil's Den Canyon[2]	320	---	---	---
McKittrick Canyon[2]	200	---	---	---
Cave Resources Primary Occurrence Zone[6]	350,000	387,000	387,000	387,000
TOTAL ACRES	360,703	552,237	597,068	599,120

[1] Surface disturbing activities would still be allowed as long as they do not interfere with the management objectives for the area. Site-specific stipulations will be defined when the activity plans for the areas are developed, or as specific actions are proposed.

[2] Acreage reflects public lands presently managed under Wilderness Interim Management Policy guidance. Also refer to Chapter 2, Continuing Management Guidance, Wilderness.

[3] Total acreage for no surface disturbance within the 26,800 acres would encompass a one-quarter mile radius (126 acres) for Alternatives B and C and one-half-mile radius (502 acres) for Alternative D. Acreage could change as number and location of heronries change.

[4] Acreage per active raptor nest would encompass a one-quarter mile radius (126 acres) for Alternatives B, C, and D. Total acreage for no surface disturbance within the 89,360 acres would change as number and location of active raptor nests change.

[5] Acreage excludes any nonpublic lands proposed for acquisition.

[6] Special stipulation only applies to oil and gas exploration/development immediately surrounding cave resources: No drilling within 300 feet of cave features in Alternatives A and B, 450 feet for Alternative C, and 600 feet for Alternative D with no fluid pits allowed within 600 feet of cave features in all alternatives.

TABLE 2-7
AREAS WITH NO SURFACE OCCUPANCY STIPULATION
Oil and Gas

		Approximate Acres Federal Minerals by Alternative			
Location		A	B	C	D and D1
Special Management Area:					
1	Seven Rivers Hills	540	540	540	540
2	Cave Resources:				
2(a)	McKittrick Hill Caves Complex	-0-	3,440	4,920	4,920
2(b)	Lost Cave	-0-	10	20	20
2(c)	Fence Canyon Caves Complex	-0-	300	340	360
2(d)	Little Manhole/Big Manhole Caves	-0-	100	100	100
2(e)	Yellowjacket/Lair Caves	-0-	260	260	260
2(f)	Chosa Draw Caves Complex	-0-	720	1,160[1,2]	3,000[1,2]
2(g)	Mudgetts/Little Mudgetts Caves	-0-	50	50	50
2(h)	Honest Injun Cave	-0-	10	10	10
3	South Texas Hill Canyon	-0-	-0-	1,360	1,960
4	Dark Canyon	-0-	150	4,020[2]	4,020[1,2]
5	Lonesome Ridge	1,200	2,240	2,990	2,990
6	Spring Riparian Habitat:				
6(c)	Cottonwood Spring	-0-	108	108	108
6(e)	Ben Slaughter Draw	-0-	165	205	375
7	Yeso Hills	-0-	-0-	640	5,460
8	Bluntnose Shiner Habitat	-0-	200	200	200
10	Laguna Plata	1,080	-0-	3,360[1]	3,360[1]
11	Maroon Cliffs	1,880	-0-	1,880	1,880
12	Potash Bull Wheel	-0-	4	4	4
18	Pecos River/Canyons Complex	-0-	3,300	4,100[1]	4,870[1]
19	Pope's well	40	40	40	40
20	Guadalupe Escarpment Scenic Area	-0-	-0-	11,700[2,3]	11,700[2,3]
23	Pecos River Corridor	-0-	120	6,000	6,000
100-Year Floodplains		-0-	-0-	-0-	7,300
Total Acres (Federal Minerals)		4,740	11,157	44,007	59,527

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[1] Acreage excludes any nonpublic minerals proposed for acquisition.

[2] Acreage includes both Federal surface/Federal subsurface minerals and non-Federal surface/Federal subsurface minerals.

[3] In Zone 1, only.

TABLE 2-8

AREAS CLOSED TO LEASABLE SOLID MINERALS

Location		Approximate Acres of Federal Minerals by Alternative			
		A	B	C	D and DI
SMA #	Special Management Area:				
1	Seven Rivers Hills	-0-	540	540	540
2	Cave Resources:[6]				
2(a)	McKittrick Hill Caves Complex	-0-	600	755	755
2(b)	Lost Cave	-0-	10	20	20
2(c)	Fence Canyon Caves Complex	-0-	300	340	360
2(d)	Little Manhole/Big Manhole Caves	-0-	100	100	100
2(e)	Yellow Jacket/Lair Caves	-0-	260	260	260
2(f)	Chosa Draw Caves Complex	-0-	720	2,640[1,3]	3,000[1,3]
2(g)	Mudgetts/Little Mudgetts Caves	-0-	50	50	50
2(h)	Honest Injun Cave	-0-	10	10	10
6	Springs Riparian Habitat:				
6(b)	Preservation Spring	-0-	33	33	53
6(c)	Cottonwood Spring	-0-	108	108	108
6(d)	Owl Spring	-0-	15	25	25
6(e)	Ben Slaughter Draw	-0-	165	205	375
6(f)	Blue Spring	-0-	-0-	440[3]	440[3]
7	Yeso Hills	-0-	-0-	950	5,460
8	Bluntnose Shiner Habitat	-0-	200	200	200
9	Little McKittrick Draw	-0-	100	500	500
10	Laguna Plata[5]	-0-	3,360	3,360[1]	3,360[1]
18	Pecos River/Canyons Complex	-0-	3,300	4,100[1]	5,190[1]
20	Guadalupe Escarpment Scenic Area	-0-	-0-	11,700[2]	64,150[4]
Gnome Site		680	680	680	680
State Militia Parcel		720	720	720	720
WIPP Site		10,240	10,240	10,240	10,240
Pecos River Power Project (Red Bluff Reservoir)		-0-	120	6,000	6,000
TOTAL ACRES (Federal Minerals)		13,369	21,631	43,976	102,596

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[1] Acreage excludes non-Federal surface/non-Federal minerals proposed for acquisition.

[2] Zone I, only.

[3] Acreage includes Federal surface/Federal minerals and non-Federal surface/Federal minerals.

[4] 4,820 acres covered in Yeso Hills acreage, above.

[5] Potash excluded.

[6] Although only the intensively managed caves identified within the Cave Resource SMA are shown here, all caves in the Cave Primary Occurrence zone would be closed to exploring for or developing solid leasable minerals under Alternatives B, C, and D.

deposits. Some of the areas are small enough that exploration could take place from outside the protected area (See Table 2-8).

Salable Minerals

About 2.7 Million acres of Federal subsurface estate would be open to retrieve salable mineral materials. New caliche pits would be permitted as needed. About 46,191 acres within areas listed in Table 2-9 would be closed to mineral material sales.

Locatable Minerals

In addition to the existing 14,249 acres of withdrawals, 7,755 acres would be withdrawn from mineral entry under the 1872 Mining Laws. Table 2-4 shows the areas and acreage proposed for withdrawal for Alternative B.

RANGELAND RESOURCES

Vegetation

Approximately 199,000 acres would be treated. Prescribed burning would be the predominent vegetative treatment. Less than 10 percent of the acreage would be treated chemically.

Livestock Grazing

In the long term, livestock grazing would increase from 192,000 to 232,000 Animal Unit Months (AUM). To improve ecological condition on poor and fair rangeland, approximately $1,600,000 of BLM rangeland improvement funds would be spent on rangeland improvements.

Under this alternative, the 12 existing AMPs would be fully implemented and maintained. An additional 54 CMPs would be developed and implemented. Total acres covered by AMPs and CMPs would be 691,000 (See Appendix D-6).

Wildlife Habitat

Seasonal drilling restrictions would be removed from the San Simon Swale Pronghorn Habitat area. Only 25 percent of the surface acres are managed by BLM and most are scattered parcels. This has caused the pronghorn populations to decline steadily over the last five years (NMDG&F 1984). Seasonal stipulations including no drilling near active nests would be applied to protect 89,360 acres of raptor nesting habitat and 26,800 acres of great blue heron nesting habitat.

Riparian and pseudoriparian habitat would be considered key areas for mule deer. Grass Flats, Mixed Shrub Rolling Uplands, and Mesquite Sand Dunes standard habitat sites (SHS) would be considered key areas for pronghorn. Riparian (4,500 acres) and pseudoriparian (50,000 acres) habitat would be intensively managed to protect water, vegetation, and wildlife resources through fence modifications livestock adjustments, and vegetative treatments.

An HMP of 161 acres would be developed for several springs. Management prescriptions would include prescribed burning, livestock adjustments, fence modifications, and monitoring.

A 1,520-acre Research Natural Area (RNA) and 4,230-acre ACEC would be developed in the Pecos River/Canyon Complex SMA to protect riparian and associated resources along a section of free flowing river. This would exclude livestock grazing within the RNA.

Areas totalling 1,329 acres would be fenced to exclude livestock to protect riparian wildlife habitat (see Table 2-10). An additional 2,500 acres of riparian habitat would be intensively managed to improve its condition.

A 200-acre parcel of BLM surface along the Pecos River would be proposed for jurisdictional transfer to the NMDG&F. This may allow more feasible management of the Threatened bluntnose shiner fish through State jurisdiction.

Threatened or Endangered Species Habitat

An HMP would be developed for 205 acres in Ben Slaughter Draw to provide intensive management for the populations of the

TABLE 2-9

SPECIAL MANAGEMENT AREAS CLOSED TO FURTHER
MINERAL MATERIAL SALES

Location		Approximate Acres of Federal Minerals by Alternative A	B	C	D and DI
Special Management Area:					
1	Seven Rivers Hills	-0-	540	540	540
2	Cave Resources:				
2(a)	McKittrick Hill Caves Complex	-0-	3,440	4,920	4,920
2(b)	Lost Cave	-0-	10	20	20
2(c)	Fence Canyon Caves Complex	-0-	300	340	360
2(d)	Little Manhole/Big Manhole Caves	-0-	100	100	100
2(e)	Yellowjacket/Lair Caves	-0-	260	260	260
2(f)	Chosa Draw Caves Complex	-0-	720	2,640[1], [2]	3,000[1], [2]
2(g)	Mudgetts/Little Mudgetts Caves	-0-	50	50	50
2(h)	Honest Injun Cave	-0-	10	10	10
3	South Texas Hill Canyon	-0-	-0-	1,360	1,960
4	Dark Canyon	-0-	4,750[2]	4,750[2]	4,750[1], [2]
5	Lonesome Ridge	-0-	2,240	2,990	2,990
6	Springs Riparian Habitat:				
6(a)	Bogle Flat Spring	-0-	3	3	5
6(b)	Preservation Spring	-0-	33	33	53
6(c)	Cottonwood Spring	-0-	108	108	108
6(d)	Owl Spring	-0-	15	25	25
6(e)	Ben Slaughter Draw	-0-	205	205	375
6(f)	Blue Spring	-0-	440[2]	440[1], [2]	440[1], [2]
7	Yeso Hills	-0-	5,460	5,460	5,460
8	Bluntnose Shiner Habitat	-0-	200	200	200
9	Little McKittrick Draw	-0-	100	500	500
10	Laguna Plata	-0-	3,360	3,360[1]	3,360[1]
11	Maroon Cliffs	-0-	12,423	12,423	12,423[1]
12	Potash Bull Wheel	-0-	4	4	4
15	Phantom Banks Heronries Area	-0-	560	560	560
18	Pecos River/Canyons Complex	-0-	3,300	5,190[1]	5,190[1]
20	Guadalupe Escarpment Scenic Area	-0-	-0-	11,700[2], [3]	11,700[2], [3]
23	Pecos River Corridor	-0-	6,000[4]	6,000[4]	6,000[4]
Gnome Site		680	680	680	680
State Militia		720	720	720	720
WIPP Project		160	160	160	160
Total Acres (Federal Minerals)		1,560	46,191	65,751	66,923

[1] Acreage excludes any nonpublic minerals proposed for acquisition.

[2] Acreage includes Federal surface/Federal subsurface minerals and non-Federal surface/Federal subsurface minerals.

[3] Zone 1, only.

[4] Includes 1,729 acres of Pecos River Water Project (Red Bluff Reservoir), presently withdrawn.

TABLE 2-10

AREAS DESIGNATED FOR NO LIVESTOCK GRAZING

		Approximate Acres by Alternative				
SMA#	Special Management Area	A	B	C	D	DI
3	South Texas Hill Canyon	-0-	-0-	1,360	1,960	
6	Springs Riparian Habitat:					
6(a)	Bogle Flat Spring	-0-	3	3	5	
6(b)	Preservation Spring	-0-	33	33	55	
6(c)	Cottonwood Spring	-0-	108	108	108	
6(d)	Owl Spring	-0-	15	25	25	
6(e)	Ben Slaughter Draw	-0-	40	80	80	
6(f)	Blue Springs	-0-	-0-	160[1/]	160[1/]	
7	Yeso Hills	-0-	-0-	640	640	
8	Bluntnose Shiner Habitat	-0-	200	200	200	
9	Little McKittrick Draw	-0-	100	500	500	
14	San Simon Swale Pronghorn Habitat	25,000[2/]	-0-	-0-	25,000[2/]	
18	Pecos River/Canyons Complex	-0-	1,520	2,320[1/]	2,320[1/]	
23	Pecos River Corridor (At Red Bluff Reservoir)	-0-	120	120	160	
TOTAL ACRES		25,000	2,139	5,549	31,213	960,000

[1/] Acreage excludes any non-Federal lands proposed for acquisition.

[2/] Applicable to sheep and goats, only.

Federally Listed Threatened gypsum wild buckwheat (Eriogonum gypsophilum). The adjacent riparian habitat and Ben Slaughter Spring would also be protected within the 205 acres. Management prescriptions would include several prescribed burning, livestock adjustments, fence modifications, and monitoring.

An ACEC would be designated for 160 acres of Federal surface and 440 acres of Federal subsurface adjacent to Blue Spring. This would protect the Federally Listed Endangered Pecos gambusia (Gambusia nobilis) and its habitat in the CRA. Surface disturbance would be disallowed.

A 100-acre RNA would be developed to protect the Federal candidate species, ramshorn snail (Pecosorbis kansensis), located in Little McKittrick Draw. Stipulations providing for no surface disturbance and livestock exclusion would protect the habitat while providing research opportunities.

Yeso Hills 5,460 acres would be designated as an ACEC to protect endemic gypsophils and fragile soils. Management prescriptions would include limited ORV use, restricted surface disturbance, and fence modifications.

Prescriptions for Seven Rivers Hills Critical Habitat would include protective withdrawals from locatable minerals and closure to mineral sales. Under this alternative the FWS Recovery Plan for T&E species would continue to be implemented.

SPECIAL MANAGEMENT AREAS

Table 2-5 displays the SMAs proposed for this alternative. There would be 21 SMAs containing 226,922 acres. Each SMA would have an activity plan developed for it. Appendix E describes management prescriptions for each SMA by each alternative.

Areas of Critical Environmental Concern

Six ACECs would be designated for a total of 17,670 public land surface acres. They include Chosa Draw Caves Complex (720 acres), Dark Canyon (3,950 acres), Lonesome Ridge (2,990 acres), Blue Spring (160 acres), Yeso Hills (5,460 acres), and Pecos River/Canyons Complex (4,390 acres). Proposed management prescriptions for these areas are described in Appendix E.

Fire Management

Table 2-2 depicts the areas totalling 231,602 acres where limited fire management would be implemented. Full suppression would continue over the remainder of public lands.

Recreation

At Red Bluff Reservoir, 120 acres would be developed for intensive recreation use and designated as part of the 6,000-acre Pecos River Corridor SRMA. The developed area would be closed to exploring for and developing leasable minerals and would be covered by an NSO stipulation. These stipulations would be in addition to the existing stipulations. A half-mile-wide corridor along the Pecos River would be managed to primarily protect fragile natural and scenic resources. Actions would include closure to exploring for and developing salable minerals, limited ORV use, meeting VRM Class II and Class III objectives, and restricting surface disturbing activities.

The entire 2,990-acre Lonesome Ridge SMA would be designated an ACEC. Approximately 2,240 acres within the ACEC would be designated as an Outstanding Natural Area (ONA) to protect their natural values. Stipulations would include NSO and closure to salable mineral and ORV use.

Off-Road Vehicles

Twenty areas containing 50,059 acres would be designated limited for ORV use (see Table 2-11). Laguna Plata would be limited under Alternative B. Designated closed areas include springs, T&E species habitats, some intensively managed cave areas, important cultural resource areas and other SMA areas listed in Table 2-12. ORV closures in the CRA would be decreased from 4,615 to 3,999 acres. Two areas would be managed as

TABLE 2-11
OFF-ROAD VEHICLES LIMITED DESIGNATIONS

	Location	Approximate Acres by Alternative			
		A	B	C	D
Special Management Areas					
1	Seven Rivers Hills	540	540	540	540
2	Cave Resources:				
2(a)	McKittrick Hills Caves Complex	-0-	3,440	4,920	4,920
2(b)	Lost Cave	-0-	10	20	20
2(c)	Fence Canyon Caves Complex	-0-	300	340	360
2(d)	Little Manhole/Big Manhole Caves	-0-	100	100	100
2(e)	Yellowjacket/Lair Caves	-0-	260	260	260
2(f)	Chosa Draw Caves Complex	-0-	720	2,200[1/]	2,360[1/]
3	South Texas Hill Canyon	-0-	-0-	1,360	1,960
4	Dark Canyon	2,941[3/]	3,950	3,950	3,950[1/]
5	Lonesome Ridge	3,342[3/]	750	-0-	-0-
6	Springs Riparian Habitat:				
6(d)	Owl Spring	-0-	15	25	25
6(e)	Ben Slaughter Draw	-0-	205	205	375
6(f)	Blue Spring	-0-	160	160[1/]	160[1/]
7	Yeso Hills	-0-	5,460	5,460	5,460
10	Laguna Plata	-0-	3,360	-0-	-0-
11	Maroon Cliffs	12,423	12,423	12,423	12,423[1/]
13	Los Medanos Raptor Area	-0-	-0-	-0-	89,360
14	San Simon Swale Pronghorn Habitat	-0-	-0-	-0-	25,000
15	Phantom Banks Heronries Habitat	-0-	-0-	26,800	26,800
16	Poco Site	-0-	51	51	51
17	Bear Grass Draw	-0-	320	1,780	3,040
18	Pecos River/Canyons Complex	-0-	3,175	3,975[1/]	3,975[1/]
20	Guadalupe Escarpment Scenic Area	-0-	8,820[2/]	8,820[2/]	49,570
33	Pecos River Corridor	-0-	6,000	6,000	6,000
Southern Gypsum Soil Area		-0-	-0-	-0-	87,050
Devil's Den Canyon[3/]		320	---	---	---
McKittrick Canyon[3/]		200	---	---	---
Total Acres		19,766	50,059	79,389	323,759

[1/] Acreage excludes any nonpublic lands proposed for acquisition.

[2/] Zone 1, only.

[3/] Acreage reflects public lands presently managed under Wilderness IMP guidance. This acreage is a restriction by policy, not an ORV formal designation. Also refer to Chapter 2, Continuing Management Guidance, Wilderness.

TABLE 2-12
OFF-ROAD VEHICLES CLOSED DESIGNATIONS

SMA #	Special Management Area	Approximate Acres by Alternative A	B	C	D and DI
2	Cave Resources:				
2(g)	Mudgetts/Little Mudgetts Caves	-0-	50	50	50
2(h)	Honest Injun Cave	-0-	10	10	10
5	Lonesome Ridge	-0-	2,240	2,990	2,990
6	Springs Riparian Habitat:				
6(a)	Bogle Flat Spring	-0-	0	3	5
6(b)	Preservation Spring	-0-	33	33	53
6(c)	Cottonwood Spring Draw	-0-	108	108	108
8	Bluntnose Shiner Habitat	-0-	200	200	200
9	Little McKittrick Draw	-0-	100	500	500
10	Laguna Plata	3,360	-0-	3,360[1/]	3,360[1/]
18	Pecos River/Canyons Complex	1,215	1,215	1,215	1,215
19	Pope's Well	40	40	40	40
Total Acres		4,615	3,996	8,509	8,531

[1/] Acreage excludes any nonpublic lands proposed for acquisition.

intensive ORV use areas, Hackberry Lake (55,800 acres) and Alkali Lake (900 acres) to accommodate both commercial, competitive motorcycle events as well as recreational ORV pursuits.

Cave Resources

Caves on public lands would be managed to protect their natural values while still allowing recreational, educational, and scientific use. Eighteen caves within eight management units would be actively protected and intensively managed. There would be 4,460 acres designated a Cave Resources SRMA. Dry Cave would be designated an RNA specifically for paleontological research (420 acres). Of the McKittrick Hill Caves Complex, 1,200 acres would be recommended for National Natural Landmark designation and Chosa Draw would be designated an ACEC (720 acres). Honest Injun Cave would be managed for its cultural values (10 acres). A total of 4,890 acres of intensively managed cave resources would be protected, as necessary, for each cave or cave area. Management actions on those intensively managed caves or cave areas would include NSO for oil and gas exploration and development, designated closed or limited (on designated routes only), restricted surface disturbance, withdrawal of locatable minerals, closure to solid leasable minerals and salable minerals, restrictions on geophysical operations and rights-of-way actions, and management under VRM Class II and Class III objectives. Tables 2-4, 2-6, 2-7, 2-8, 2-11, 2-12, and 2-13, display acreage for these actions within each inten- sively managed cave area.

Other caves would be intensively managed when additional information justifies the need for their protection of visitors or resources.

A 387,000-acre cave resource primary occurrence area would be managed to ensure protection of other caves either not intensively managed or as yet undiscovered. Steps to ensure protection of these caves would include maintaining an oil and gas drilling distance of not less than 300 feet, and pits not less than 600 feet from cave entrances, passages, or major karst features.

Visual Resources

The entire CRA would be designated into the following VRM classes: Class I, 2,240 acres; Class II, 23,620 acres; Class III, 290,020 acres; and Class IV, 1,855,120 acres (Table 2-14). The only area having visual Class I management objectives would be Lonesome Ridge (2,240 acres). Class II areas would include the Pecos River (8,320 acres), six intensively managed cave areas totalling 4,150 acres, Seven Rivers Hills area (2,080 acres), Pecos River/Canyons Complex (3,300 acres), the west Rio Penasco Canyon (3,520 acres), and the Guadalupe Rim/El Paso Gap area (2,080 acres). The most notable SMA in VRM Class III is the Guadalupe Escarpment Scenic Area (8,820 acres), established to help protect visual quality and sensitivity.

Dark Canyon (3,950 acres) and the Pecos River/Canyon Complex (4,390 acres) would be designated ACECs due in part to their high visual qualities.

Cultural Resources

There would be 16,198 acres in six Cultural Resource Management Areas (CRMA)(See Table 2-5).

Implementation of the production alternative would require considerable more intensive patrolling and monitoring programs, more large aerial surveys, and more data recovery programs. This would occur because increased production of mineral resources requires more extensive protective programs for cultural resources.

Paleontological Resources

Dry Cave would be managed as a 420-acre RNA.

Rights-of-Way

Avoidance Areas

Avoidance would be designated on 15,878 acres (0.7 percent of the CRA).

TABLE 2-13
RIGHTS-OF-WAY AVOIDANCE AREAS

Location	Unit of Measure	Alternative A	B	C	D and DI
Special Management Areas[1/]:					
1(a) Seven Rivers Hills	Acres	-0-	540	540	540
2 Cave Resources: Extensive[6/]	feet from	300	300	450	600
2 Cave Resources:	cave feature	300	N/A	N/A	N/A
2(a) McKittrick Hill Caves Complex	Acres	230	1,200	3,440	4,920
2(b) Lost Cave	Acres	10	10	20	20
2(c) Fence Canyon Caves Complex	Acres	50	300	340	360
2(d) Little Manhole/Big Manhole Caves	Acres	20	100	100	100
2(e) Yellowjacket/Lair Caves	Acres	50	260	260	260
2(f) Chosa Draw Caves Complex	Acres	195	720	1,160	2,360
2(g) Mudgetts/Little Mudgetts Caves	Acres	30	50	50	50
2(h) Honest Injun Cave	Acres	10	10	10	10
3 South Texas Hill Canyon	Acres	-0-	-0-	1,360	1,960
4 Dark Canyon	Acres	2,941[2/]	-0-	3,220[3/]	3,220[3/]
5 Lonesome Ridge	Acres	3,342[2/]	2,240	2,980	2,990
6 Springs Riparian Habitat:					
6(a) Bogle Flat Spring	Acres	-0-	3	3	5
6(b) Preservation Spring	Acres	-0-	33	33	53
6(c) Cottonwood Spring	Acres	-0-	108	108	108
6(d) Owl Spring	Acres	-0-	15	15	25
6(e) Ben Slaughter Draw	Acres	-0-	205	205	375
6(f) Blue Spring	Acres	-0-	160	160[4/]	160[4/]
7 Yeso Hills	Acres	-0-	-0-	950	5,460
8 Bluntnose Shiner Habitat	Acres	-0-	200	200	200
9 Little McKittrick Draw	Acres	-0-	100	500	500
10 Laguna Plata	Acres	-0-	-0-	3,360	3,360
11 Maroon Cliffs	Acres	-0-	1,880	12,423	12,423
12 Potash Bull Wheel	Acres	-0-	4	4	4
			*Acreage included in SMA No. 11		
18 Pecos River/Canyons Complex	Acres	-0-	3,300	4,180	4,870
19 Pope's Well	Acres	-0-	40	40	40
20 Guadalupe Escarpment Scenic Area	Acres	-0-	-0-	-0-	8,820
Devil's Den Canyon[2/]	Acres	320	---	---	---
McKittrick Canyon[2/]	Acres	200	---	---	---
McKittrick Penny Royal (along Black River)[5/]	Acres	-0-	1,280	1,280	1,280
			*Acreage included SMA No. 5		
Buckwheat Area (along Black River)[5/]	Acres	-0-	1,580	1,580	1,580
Seven Rivers Hills (VRM Class II Area)	Acres	-0-	1,540	1,540	1,540
TOTAL ACRES		7,398	15,878	39,991	57,598

[1/] See Appendix E for a discription of each SMA.

[2/] Areas managed under Wilderness IMP are avoidance areas. Also refer to Chapter 2, Continuing Management Guidance, Wilderness.

[3/] Surface acreage in Zone 1 only. Cave resources of Zone 2 are covered in Intensively Managed Cave Areas.

[4/] Area would extend to 640 acres total upon acquisition of 480 acres of private land.

[5/] Description of Area in CRA files.

[6/] Includes all caves within the Cave Resource Primary Occurrence Zone not included within the Cave Resources SMA.

ACCESS

Under this alternative, legal access would be acquired on one quarter-mile road segment which presently forms a gap in Lea County Road C-2.

There are no other known areas where BLM access acquisition is necessary to benefit commodity resource development; therefore, no action is proposed in the 106 tracts (See Appendix F).

There are 19 tracts where restrictions on vehicular use would be implemented in support of the objectives for SMAs (See Appendix F).

TABLE 2-14
VISUAL RESOURCE MANAGEMENT CLASSES

Proposed Management Class	Approximate Acres by Alternative A	B	C	D and DI
Class I	-0-	2,240	2,990	2,990
Class II	10,620	23,620	37,520	37,550
Class III	8,058	290,020	276,160	276,900
Class IV	1,187,322	1,855,120	1,854,330	1,853,560
Undesignated	965,000	-0-	-0-	-0-
TOTAL ACRES	2,171,000	2,171,000	2,171,000	2,171,000

ALTERNATIVE C

The objective of this alternative is to balance resource utilization with conservation. It is intended to resolve competing or conflicting land uses and to promote sustained productivity and multiple use.

LAND TENURE

Land tenure in this alternative would be the same as Alternative B, with the exception that disposal would emphasize balance between disposals for commodity production and disposals for other BLM objectives, such as land ownership consolidation, as well as balancing disposal by State and private exchanges with disposal by public sale.

This alternative proposes acquiring 1,080 acres of private land for the Blue Spring, the Chosa Draw, and the Pecos River/Canyons Complex ACECs. An estimated 2,120 acres of State land is proposed for acquisition for the Maroon Cliffs, Laguna Plata, and Pecos River/Canyons Complex SMAs.

MINERALS AND ENERGY RESOURCES

Oil and Gas

In addition to management described in Continuing Management Guidance and Alternative A, this alternative would increase the acreage of Federal subsurface mineral estate open for oil and gas leasing under special stipulations by 236,365 acres to a total of 597,068 acres. Of the total acreage with special stipulations, 44,007 acres would be under the NSO stipulation. Tables 2-1, 2-6, and 2-7 list the SMAs that would be protected by special stipulations.

Seasonal stipulations, including "no drilling," would be increased from 116,160 acres under Alternative B to 116,890 acres. The increase of 730 acres would be in Dark Canyon.

Oil and gas production and storage facilities would not be allowed in 100-year floodplains. Drilling would be allowed in the floodplain only if there is no reasonable alternative. BLM would require approval of a plan to prevent contamination or adverse impacts to the floodplain. No pits would be allowed for any new salt water disposal facilities in the Capitan Reef and back reef area west of the Pecos River. Netting would be required on all new salt water disposal pits and tanks in CRA to protect livestock and wildlife.

Any geophysical operations; i.e., seismic activities, conducted would comply with ORV designations and ensure protection of sensitive or fragile resources. As determined by BLM, a safety and resource clearance would be conducted prior to any geophysical operations. These are performed to ensure protection of fragile resources and to detect any hazards.

Leasable Solid Minerals

Potash

Potash leasing within the area covered by the SO would not be affected. Prospecting outside that area would not be allowed on 43,976 acres.

Other Leasable Solid Minerals

Areas NOL would be increased from the present 11,640 acres to 43,976 acres in 24 areas. See Table 2-8. The withdrawals would help protect high scenic and wildlife values, fragile soils and cave resources, and other sensitive natural and cultural resource values.

Alternative C would leave 2,665,369 acres of Federal subsurface mineral estate open for leasing and development under standard stipulations.

Salable Minerals

Caliche, sand, gravel, building stone, and other salable minerals would be made available from public lands. No new caliche pits would be permitted, except when existing pit locations are not close enough to support minerals or multiple-use needs. Table 2-9 shows locations of the 31 areas totalling 65,751 acres, which would be closed to mineral materials sales.

Locatable Minerals

In addition to the existing 14,249 acres of withdrawals, 11,629 acres would be withdrawn from mineral entry under Alternative C. Table 2-4 shows the 25 areas proposed for withdrawal. Withdrawals would total 25,878 acres of Federal mineral estate.

RANGELAND RESOURCE

Vegetation

Approximately 33,000 acres are proposed for vegetative treatement. Less than 10 percent of the acreage would be treated chemically. The remainder of the acreage would be treated with prescribed burning.

Livestock Grazing

In the long term, livestock grazing would increase from 192,000 AUMs to 225,000 AUMs. To improve ecological condition on poor and fair rangeland, approximately $900,000 of BLM rangeland improvement funds would be spent on rangeland improvements.

Under this alternative the 12 existing AMPs would be fully implemented and maintained. An additional 49 CMPs would be developed and implemented. Total acres covered by AMPs and CMPs would be 413,000 (see Appendix D-6).

Wildlife Habitat

HMPs would be implemented for muledeer on approximately 125,000 acres and for antelope on approximately 114,500 acres. These would include water developments, fence modifications, and vegetative treatment. The San Simon Swale Pronghorn Antelope Habitat seasonal stipulation on drilling activity would be eliminated.

Game bird habitat quality would also be improved by implementing an HMP covering 96,000 acres. Management prescriptions would include water developments and vegetative treatments.

All riparian (4,500 acres) and pseudoriparian (50,000 acres) habitat would be managed the same as discussed under Alternative B. Prescriptions and acreages for HMPs on springs would also be the same as Alternative B.

RNAs of 1,360 acres for South Texas Hill Canyon and 640 acres for Yeso Hills would be designated in addition to the RNAs listed in Alternative B. Prescriptions would include no surface disturbance and livestock exclusions. No surface disturbance stipulations would apply to 950 acres in Yeso Hills to avoid slumping from potential sulphur exploration within the 640-acre RNA. The Yeso Hills ACEC would remain the same as Alternative B.

The Pecos River/Canyon Complex RNA management prescriptions would remain the same as Alternative B but the acreage would increase to 2,320 acres. This would incorporate a portion of the free flowing river which is influenced by a hot spring. Acreage for a livestock exclusion would also increase to 5,609.

Threatened or Endangered Species Habitat

The Ben Slaughter Draw SMA and Blue Spring ACEC would remain the same as in Alternative B. An 640-acre HMP for Blue Spring would also be developed to protect the Federally Endangered Pecos gambusia (*Gambusia nobilis*) and its habitat. This HMP would be developed only if 480 acres of private and State surface can be acquired.

Little McKittrick Draw RNA management prescriptions in Alternative B would be the same, but an additional 400 acres would be added to create a buffer zone adjacent to the RNA.

The bluntnose shiner critical habitat (200 acres) would be retained by BLM and managed according to FWS recovery plan guidelines. This would include livestock adjustments, restricted surface disturbance, and no oil and gas surface occupancy.

SPECIAL MANAGEMENT AREAS

Table 2-5 displays the SMAs proposed under this alternative. There would be 22 SMAs totalling 274,712 acres of public land. Each SMA would have an activity plan developed for it. Management prescriptions for each SMA by each Alternative are described in Appendix E.

Areas of Critical Environmental Concern

There would be six ACECs designated for a total of 19,950 public land surface acres, an increase of 2,280 acres from Alternative B. They include Chosa Draw Caves Complex (2,200 acres), Dark Canyon (3,950 acrew), Lonesome Ridge (2,990 acres), Blue Spring (160 acres), Yeso Hills (5,460 acres), and Pecos River/ Canyons Complex (5,190 acres). In addition to this acreage, some management prescriptions would be implemented on adjacent Federal mineral/non-Federal surface parcels to help meet ACEC management objectives. Non-Federal lands and minerals proposed for acquisition would become part of an ACEC upon being acquired. Proposed management prescriptions for these potential ACECs are provided in detail in Appendix E.

Fire Management

Table 2-2 lists 30 areas where limited fire management would be implemented to protect resource values. Limited suppression would occur on about 237,232 acres, and full suppression would continue over the remainder of the CRA.

Recreation

The Pecos River Corridor SRMA would be managed the same as under Alternative B, except an NSO stipulation would be applied to oil and gas leases affecting 4,271 acres of the area. The entire area would be closed to exploring for or developing leasable minerals.

The Lonesome Ridge ONA would be the same size as the ACEC designation, 2,990 acres, and managed to remain in natural state. The management prescriptions would include an NSO stipulation, a closed designation for ORV use, modified fire suppression, and withdrawal from mining claim location.

Off-Road Vehicles

This alternative would designate 20 areas as limited ORV use and the acreage would increase from the current 19,766 acres to 79,389 acres (See Table 2-11).

A total of 8,509 acres would be designated closed with the addition of Laguna Plata (3,360 acres). (See Table 2-12).

Hackberry Lake (55,800 acres) and Alkali Lake (900 acres) intensive ORV use areas would be established and managed for organized or commercial events, as well as general recreational ORV use.

Cave Resources

Management of the cave resources would be the same as for Alternative B with the following exceptions:

Eight cave management units totaling 7,620 acres would be protected by various stipulations and use restrictions. The Cave Resources SRMA would include 5,990 acres. The Chosa Draw ACEC designation would cover 2,200 acres.

Stipulations to prohibit drilling a minimum of 450 feet from known cave features would be implemented (an increase from the current 300-foot distance) within the cave resource primary occurrence area. Fluid pit location distance would remain as not less than 600 feet from cave entrance, passages or major Karst features.

Visual Resources

The CRA would be designated into the following VRM classes: Class I - 2,990 acres; Class II - 37,520 acres; Class III - 276,160 acres; and Class IV - 1,854,330 acres.

Lonesome Ridge would be the only area with Class I management. Areas with Class II visual management objectives would include the following SMAs: Guadalupe Escarpment Scenic Area (8,820 acres-Zone I), seven intensively managed cave areas (5,670 acres), Seven Rivers Hills (540 acres), Pecos River Corridor (4,200 acres), Dark Canyon (3,120 acres), and the Pecos River/Canyons Complex (4,100 acres). The remaining acreage in Class II is not in SMAs.

The most notable SMA managed in accordance with Class III VRM objectives would be 40,750 acres within zone 2 of the Guadalupe Escarpment Scenic Area to help protect visual quality and sensitivity. Zone I of the Scenic Area and Zone I of the Dark Canyon ACEC would have an NSO stipulation on oil and gas leasing, a closure to mineral material sales, and a limited ORV-use designation. Special stipulations would be applied within the Scenic Area to minimize adverse visual impacts. A seasonal "no drilling" stipulation would be in effect between April I and September 15 annually on 730 acres. This stiuplation would reduce the adverse impacts during the high use season at Carlsbad Cavern's National Park.

Cultural Resources

The Cultural Resources program will be managed the same as Alternative B, except that the acreage in Bear Grass Draw CRMA would be increased from 320 to 1,780 acres for a total of 17,658 acres in the CRMAs. The need for protective cultural resource programs would be proportionally diminished in Alternative C to the extent that minerals and other surface disturbing programs are moderated to meet the objectives of a balanced alternative.

Paleontological Resources

Management of Dry Cave would be as a 420-acre RNA. Management actions would be the same as Alternative B.

Rights-of-Way

Avoidance Areas

This alternative would designate 39,991 acres as avoidance areas, or 1.8 percent of the public lands in the CRA.

ACCESS

Resolution of access problems would be focused on the highest priority land tracts within the CRA (See Appendix F). In the short-term activity plans would be developed to provide adequate access to six high priority tracts; i.e., areas which contain large amounts of inaccessible public land or high demand resource values. In the long-term, access in eleven moderate and eight low priority tracts would be improved

Access restrictions would be implemented to minimize resource conflicts in 22 land tracts. Restrictions would be accomplished through procedures such as ORV designations, temporary closures or normal road abandonment procedures.

Eighty-five low priority tracts have sufficient motorized/nonmotorized access or lack access conflicts, and no action is proposed in these areas but road systems could be altered in response to changing needs or resource development actions.

ALTERNATIVE D

This alternative emphasizes protection and preservation of sensitive resources such as cultural sites, wildlife habitat, natural ecosystems, and important visual resources. Activity plans would be developed for those areas requiring special management.

LAND TENURE

This alternative is the same as B, except exchange would be the preferred disposal method. Approximately 220,700 acres are identified for disposal through State exchanges, sales, R&PP, or private land exchanges, leaving 1,956,829 acres in Federal ownership in the CRA.

A total of 5,246 acres of State lands and 1,280 acres of private lands would be proposed for acquisition in the Pecos River/Canyons Complex, Blue Spring, Dark Canyon, and Chosa Draw ACEC, and the Laguna Plata Archaeological and the Maroon Cliffs Archaeological Districts.

Emphasis for R&PP leases would be placed on park and open areas and on recreational sites for public enjoyment.

MINERALS AND ENERGY RESOURCES

Oil and Gas

In addition to management described in Continuing Management Guidance and Alternative A, this alternative would increase the acreage of Federal subsurface mineral estate for oil and gas leasing with special stipulations by 2,052 acres for a total of about 599,120 acres. Of the total acreage with special stipulations, 59,527 acres would be under the NSO stipulation. Tables 2-1, 2-6, 2-7, list the areas that would be protected by special stipulations.

Seasonal stipulations, including "no drilling," would be increased from the current San Simon Swale Pronghorn Habitat area (25,000 Acres), to also include wildlife habitat at Los Medanos and Phantom Banks and for visual resources at Dark Canyon, for a total of 141,890 acres. Oil and gas drilling and production would be prohibited in 100-year flood-plains. Salt water disposal pits would not be allowed west of the Pecos River. All salt water disposal pits and tanks throughout the CRA would be covered with nets to protect wildlife and livestock.

Leasable Solid Minerals

Potash

Potash leasing within the area covered by the SO would not be affected. Prospecting outside that area would not be allowed on 102,596 acres.

Other Solid Leasable Minerals

Areas NOL would be increased from the present withdrawals to a total of 102,546 acres to preserve scenic and wildlife values, fragile soils, cave resources, and other natural and cultural resources.

Salable Minerals

Caliche, sand and gravel, and building stone would continue to be available from approximately 1.9 million acres of public lands. However, no new caliche pits would be permitted. Table 2-9 shows the 31 areas covering 66,923 acres which would be closed to salable mineral materials

Locatable Minerals

In addition to the existing 14,249 acres of withdrawals, 17,761 acres would be withdrawn from mineral entry. Table 2-4 shows the areas considered for withdrawal which would total 32,010 acres in 25 areas.

RANGELAND RESOURCES

Vegetation

Approximately 33,000 acres are proposed for vegetative treatments. Less than 10 percent would be treated chemically. The remainder of the acreage would be treated with prescribed burning.

Livestock Grazing

A rangeland management program would be initiated to reduce livestock grazing where necessary to benefit watershed, wildlife, aesthetics, and other multiple-resource uses. In the long term, livestock grazing would decrease from 225,000 AUMs to 191,000 AUMs. To improve ecological condition on poor and fair rangeland, approximately $580,000 of BLM rangeland improvement funds would be spent on rangeland improvements.

Under this alternative the 12 existing AMPs would be fully implemented and maintained. An additional 45 CMPs would be developed and implemented. Total acres covered by AMPs and CMPs would be 349,000 (see Appendix D-6).

Wildlife Habitat

Management of the San Simon Swale Pronghorn Habitat would differ from Alternative C due to designating the 25,000 acres as limited ORV.

The habitat management objectives are the same as Alternative C except that:

> Springs HMP would increase by 202 acres.
>
> South Texas Hill Canyon RNA would increase 600 acres to 1,960 acres for additional buffer zones adjacent to the RNA.

Threatened or Endangered Species Habitat

The Ben Slaughter Draw HMP would increase 170 acres to 375 acres to provide intensive management on more gypsum buckwheat habitat. Additional SMAs, and T&E habitat conditions are the same as described in Alternative C.

SPECIAL MANAGEMENT AREAS

Table 2-5 displays the SMAs that would be designated in Alternative D. The 23 SMAs totalling 301,944 acres would have activity plans developed for special resource objectives. Appendix E describes management prescriptions for each SMA.

Areas of Critical Environmental Concern

Alternative D would be the same as Alternative C, except for an added 160 acres within the Chosa Draw Caves Complex, and with some differing management prescriptions as described in Appendix E-3.

Fire Management

Table 2-2 describes areas where fire management would be implemented to protect resource values. Limited suppression zones would cover 238,664 acres, and full suppression would continue over the remainder of the CRA.

Recreation

Management objectives are the same as Alternative C for dispersed recreation and Lonesome Ridge. Management of the Pecos River Corridor would be the same in this alternative except for an increase from 120 acres to 160 acres at Red Bluff Reservoir to allow for more intensive recreation facility development.

Off-Road Vehicles

This alternative would designate 23 areas for limited ORV use for a total of 323,759 acres. This is an increase of 249,370 acres from Alternative C (See Table 2-11).

A closed ORV designation would apply to the same areas as in Alternative C, with a 22-acre increase.

Cave Resources

Management of cave resources would be the same as for Alternative B with the following exceptions:

Eight Cave Management units totalling 8,080 acres of intensively managed cave resources would be protected instead of the 7,620 acres under Alternative C. Chosa Draw ACEC would increase from 2,200 acres to 2,360 acres. The Cave Resource SRMA would increase by 20 acres to 6,010 acres.

Stipulations to prohibit drilling from a minimum of 600 feet of cave resources would be implemented (an increase from 450 feet under Alternative C) within the cave resource primary occurrence area.

Visual Resources

Locations of areas with Class I and Class II VRM objectives would generally be the same as for Alternative C. Class II designations within the intensively managed cave areas which would increase from 5,670 acres to 5,690 acres.

The Guadalupe Escarpment Scenic Area would be managed the same as under Alternative C, except for a limited ORV use designation within Zone II. Under Alternative D, 276,900 acres would be designated Class III, while 1,853,560 acres would be designated Class IV.

Cultural Resources

Cultural Resources will be managed the same as Alternatives B and C except that the Bear Grass Draw CRMA would be increased to 3,040 acres for a total of 32,188 acres in eight CRMAs. Table 2-15 displays the differences among the alternative CRMAs. Although more acreage would be placed under protective management, the protected lands only represent about 2.8 percent of the total public lands in the CRA; therefore, the need for protective cultural resource programs would continue.

Paleontological Resources

Designation of the 420-acre Dry Cave RNA would be the same as described under Alternative C.

Rights-of-Way

Avoidance Areas

Avoidance Area designations would total 57,598 acres, or 2.6 percent of the public lands in the CRA.

ACCESS

Access for the general public or for BLM administration would be obtained in four land tracts. These tracts contain SMAs where additional access is needed. Access restrictions for the purpose of resource protection would be implemented in 31 land tracts (See Table 2-3). No access acquisition or restrictions would take place in the remaining 95 land tracts.

ALTERNATIVE D[1/]

This constitutes the No Grazing Alternative and was developed to analyze the effects of eliminating livestock grazing from public lands, and would involve removing all domestic livestock from the 174 grazing allotments totalling 965,000 acres west of the Pecos River. All other programs would be managed as described in Alternative D. All vegetation would be available for wildlife, watershed, and esthetics. Some vegetation, water facilities, and gabions may be constructed or maintained to sustain or enhance wildlife or watershed management. This alternative is necessary to provide baseline information to compare the environmental impacts of the other alternatives that involve grazing.

TABLE 2-15
SUMMARY OF LAND USE ALLOCATIONS BY PLAN ALTERNATIVE

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D and DI
LAND TENURE					
State Exchange and Other Disposals	Acres Federal Surface	47,262	220,700	220,700	220,700
Acquisition					
State surface	Surface Acres	-0-	-0-	2,120	5,566
Private surface	Surface Acres	-0-	-0-	1,080	1,280
State Minerals	Mineral Acres	-0-	-0-	1,440	3,360
Private Minerals	Mineral Acres	-0-	-0-	360	360
Net BLM Retention	Acres Federal Minerals	2,123,718	1,950,300	1,953,500	1,956,826
MINERAL AND ENERGY RESOURCES					
Oil and Gas					
Open for development with special stipulations	Acres Federal Minerals	360,703	552,237	597,068	599,120
Open for leasing with NSO stipulations	Acres of Federal Minerals	4,740	11,757	44,007	59,527
NOL	Acres of Federal Minerals	11,680	11,680	11,680	11.680
Open for development with seasonal "no drilling" stipulations	Acres of Federal Minerals	25,000	116,160	116,890	141,890

TABLE 2-15 (continued)

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D and DI
Open for development with standard stipulations	Acres Federal Minerals	2,322,813	2,037,422	1,955,820	1,920,708
Leasable Solid Minerals					
Potash (acres within Oil-Potash Area only)					
Open for potash development with standard stipulations.	Acres Federal Minerals	381,740	383,820	376,500	376,500
Open for potash development with special stipulations.	Acres Federal Minerals	2,080	-0-	2,080	2,080
"No Surface Occupancy" (NSO)	Acres Federal Minerals	-0-	-0-	5,240	5,240
No potash leasing withdrawals within Oil-Potash Area	Acres Federal Minerals	9,700	9,700	9,700	9,700
Other Leasable Solid Minerals					
Open with special stipulations	Acres Federal Minerals	24,381	170,292	218,662	245,892
Salable Minerals					
Closed to Minerals Sales	Acres Federal Minerals	3,289	46,191	65,901	67,313
Continue use of existing pits	Number	941	case by case	case by case	case by case
Open new pits	Number	case by case	case by case	-0-	-0-
Close pits	Number	case by case	case by case	case by case	case by case

TABLE 2-15 (continued)

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D	ALTERNATIVE[5] DI
Rehabilitate pits	Number	case by case	case by case	case by case	case by case	
Locatable Minerals						
Lands available for location, exploration, and development of locatable minerals	Acres Federal Minerals	2,711,415	2,705,900	2,699,746	2,693,614	
Withdrawals from mining claims	Acres Federal Minerals	14,249	22,004	25,878	32,010	
RANGELAND RESOURCES						
Livestock Grazing						
Initial Forage Target[1]	AUM	192,000	192,000	192,000	178,000	-0-
Long-Term Forage Target	AUM	216,000	232,000	225,000	191,000	-0-
No Grazing	Acres	5,000[2]	2,849	5,549	31,213[3]	960,000
Rangeland Improvements	$	$200,000	$1,600,000	$900,000	$580,000	cost of removal
Rangeland Improvements						
Pipeline	Miles	-0-	24	24	24	-0-
Fence	Miles	-0-	12	12	12	-0-
Water facilities	Number	-0-	10	10	10	-0-
Vegetation Treatments	Acres	5,000	190,000	62,000	33,000	-0-
Grazing Systems	No./Acres	12/200,000	62/691,000	49/413,000	43/394,000	-0-
-0-						

[1] Alternative A, B, and C forage targets are 5-year average; Alternative D is an estimated capacity.
[2] 5,000 currently unallotted, although these areas are not designated "no grazing."
[3] 25,000 acres (San Simon Pronghorn Habitat) excludes sheep and goats, only.

TABLE 2-15 (continued)

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D and DI
Wildlife Habitat					
Riparian Protection	Acres Federal Surface	-0-	3,800	4,500	4,500
HMP:					
Springs	Acres Federal Surface	-0-	161	171	190
Blue Spring	Acres Federal Surface	-0-	-0-	640	640
		Includes 480 acres of nonpublic surface proposed for acquisition			
Ben Slaughter Draw	Acres Federal Surface	-0-	205	205	375
Indian Basin Pronghorn Herd	Acres Federal Surface	-0-	114,500	114,500	114,500
Guadalupe Mule Deer Herd	Acres Federal Surface	-0-	125,000	125,000	125,000
Querecho/Bilbry Game Birds	Acres Federal Surface	-0-	46,000	46,000	46,000
SPECIAL MANAGEMENT AREAS					
Fire Management:					
Full Suppression	Acres Federal Surface	2,163,607	1,939,398	1,933,768	1,932,336
Limited Suppression	Acres Federal Surface	7,393	231,602	237,232	238,664

TABLE 2-15 (continued)

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D and DI
ACEC Designation:					
Chosa Draw Caves Complex (SMA #2f)	Acres Federal Surface	-0-	720	2,200 excludes 480 acres private surface, and 40 acres private minerals proposed for acquisition	2,360 excludes 600 acres private surface, 40 acres private minerals, and 640 acres State surface and minerals proposed for acquisition
Dark Canyon (SMA #4)	Acres Federal Surface	-0-	3,950 excludes 800 acres private surface/Fed. min.	3,950 excludes 800 acres private surface/Fed. min.	3,950 excludes 1280 acres State surface and minerals proposed for acquisition and 800 acres private surface/Federal minerals
Lonesome Ridge (SMA #5)	Acres Federal Surface	-0-	2,990	2,990	2,990

TABLE 2-15 (continued)

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D and DI
Blue Spring (SMA #6f)	Acres Federal Surface	-0-	160	160 excludes 200 acres private minerals and 480 acres private surface proposed for acquisition	160 excludes 200 acres private minerals and 480 acres private surface proposed for acquisition
Yeso Hills (SMA #7)	Acres Federal Surface	-0-	5,460	5,460	5,460
Pecos River/Canyons Complex (SMA #18)	Acres Federal Surface	-0-	4,390	5,190 excludes 840 acres State surface, 160 acres state minerals, and 120 acres private surface and minerals proposed for acquisition	5,190 excludes 840 acres State surface, 160 acres State minerals, and 120 acres private surface and minerals proposed for acquisition
Scenic Area Designation:					
Guadalupe Escarpment (SMA #20)	Acres Federal Surface	-0-	8,820 excludes 2,880 acres as non-Fed. surface/Fed. min. in Zone 1	49,570 excludes 14,810 acres as non-Fed. surface/Fed. min. in Zones 1&2	49,570 excludes 14,810 acres as non-Fed. surface/Fed. min. in Zones 1&2

TABLE 2-15 (continued)

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D and DI
National Natural Landmark Designation:					
McKittrick Hill Caves Complex (SMA #2a)	Acres Federal Surface	-0-	1,200	1,200	1,200
Research Natural Area Designation:					
Dry Cave (in SMA #2a)	Acres Federal Surface	-0-	420	420	420
South Texas Hill Canyon (SMA #3)	Acres Federal Surface	-0-	-0-	1,360	1,960
Yeso Hills (in SMA #7)	Acres Federal Surface	-0-	-0-	640	640
Little McKittrick Draw (SMA #9) 500	Surface	Acres Federal	-0-	100	500
Pecos River/Canyons Complex (in SMA #18)	Acres Federal Surface	-0-	1,520	2,320	2,320
ONA Designation:					
Lonesome Ridge (SMA #5)	Acres Federal Surface	-0-	2,240	2,990	2,990
SRMA Designations	Acres Federal Surface				
Cave Resources (SMA #2a-2g)	Acres Federal Surface	708	4,460	5,990	6,010
Pecos River Corridor (SMA #23)	Acres Federal Surface	120	6,000	6,000	6,000

TABLE 2-15 (continued)

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D and DI
ORV Designations:					
Open	Acres Federal Surface	1,154,908	2,116,945	2,082,952	1,838,560
Limited	Acres Federal Surface	19,766	50,059	79,389	323,759
Closed	Acres Federal Surface	4,615	3,996	8,509	8,531
Undesignated	Acres Federal Surface	991,711	-0-	-0-	-0-
Intensive ORV Use Areas:					
Alkali Lake (SMA #21)	Acres Federal Surface	-0-	900	900	900
Hackberry Lake (SMA #22)	Acres Federal Surface	-0-	55,800	55,800	55,800
VRM Designations:					
VRM Class I	Acres Federal Surface	-0-	2,240	2,990	2,990
VRM Class II	Acres Federal Surface	10,620	23,620	37,520	37,550
VRM Class III	Acres Federal Surface	8,058	290,020	276,160	276,900
VRM Class IV	Acres Federal Surface	1,187,322	1,855,120	1,854,330	1,853,560
Undesignated	Acres Federal	965,000	-0-	-0-	-0-
CRMAS DESIGNATIONS:					
Honest Injun Cave (SMA #2i)	Acres Federal Surface	10	10	10	10

TABLE 2-15 (continued)

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D and DI
Laguna Plata (SMA #10)	Acres Federal Surface	3,360	3,360	3,360 excludes 1,280 acres State surface & mineral proposed for acquisition	3,360 excludes 1,280 acres State surface and minerals proposed for acquisition
Maroon Cliffs (SMA #11)	Acres Federal Surface	12,423	12,423	12,423	12,423 excludes 80 acres of private surface and minerals and 1,606 acres of State surface and minerals proposed for acquisition
Potash Bull Wheel (SMA #12)	Acres Federal Surface	4	4	4	4
Poco Site (SMA #16)	Acres Federal Surface	-0-	51	51	51
Bear Grass Draw (SMA #17)	Acres Federal Surface	-0-	320	1,780	3,040
Pecos River/Canyons Complex (SMA #18)	Acres Federal Surface	1,215	4,390	5,190	5,190
Pope's Well (SMA #19)	Acres Federal Surface	40	40	40	40
Rights-of-Way					
Avoidance areas	Acres Federal Surface	7,398	15,878	39,991	57,598
Utility Rights-of-way Corridors	Miles	185	185	185	185

TABLE 2-15 (continued)

LAND USE ALLOCATION	Unit of Measure	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D and DI
ACCESS					
Tracts Identified for Additional Access:					
High Priority Tracts	No. of tracts	-0-	1	6	4
Moderate Priority Tracts	No. of tracts	-0-	-0-	11	-0-
Low Priority Tracts	No. of tracts	-0-	-0-	8	-0-
Tracts Identified for Access Restrictions	No. of tracts	4	19	22 4/	31 5/

1/ 5,000 acres currently unallotted, although thses areas are not designated "no grazing."

2/ 25,000 acres (San Simon Swale Pronghorn Habitat) excludes sheep and goats, only.

3/ Alternative DI, No Grazing, would eliminate all livestock grazing actions for the western portion of the CRA.

4/ Twelve of the 22 access tracts identified for access restrictions also have portions identified for access acquisition. (1 high, 9 moderate, 2 low); therefore, the total tracts equals 43 and not 55.

5/ Four of the 31 access tracts identified for access restrictions also have portions identified for access acquisition (4 high); therefore, the total number of tracts equals 27 and not 31.

CHAPTER 3

AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the physical, biological, social, and economic characteristics of the Carlsbad Resource Area (CRA) which affect or are affected by the resolution of the issues identified in Chapter 1. Information in this chapter is summarized from the more detailed material contained in the CRA Management Situation Analysis (MSA) available for review at the CRA Office.

PHYSICAL SETTING

The CRA can be divided into the following three topographical areas:

BROAD HIGH PLAINS

This area includes lands east of the Pecos River. Most of this area consists of sandy plains that generally slope to the west. The southwest portion of the plains is made up of gypsum hardlands. The gently sloping and undulating low mesas and plains are dissected in places by ridges and escarpments such as the Mescalero Ridge (Caprock), Livingston Ridge which forms the Maroon Cliffs, and the McMillan Escarpment which borders the Pecos River. The area also contains several playas. The streams entering the Pecos drain only small areas, and only the Black River and the Delaware River are perennial; all other tributaries are intermittent.

PECOS RIVER VALLEY

This area includes the Pecos River and surrounding floodplain. The valley is characterized by river banks and bluffs between 50 and 100 feet high along many segments of the river.

WEST SIDE FOOTHILLS AND ESCARPMENT

This area is characterized by moderately to steeply rolling hills with limestone outcroppings. The landscape is frequently cut by dry drainages. Numerous drainages such as Dark Canyon, Rocky Arroyo, and the Penasco River generally flow in an easterly or northeasterly direction to the Pecos River.

Generally, elevations increase from east to west with the most rugged terrain adjoining the Lincoln National Forest and Carlsbad Caverns National Park lands of the Guadalupe Mountains. Many of the drainages cut steep cliff faces. The most spectacular topographic features are found in the far southwest portion of the CRA which features sheer limestone cliffs, sharp serrated ridges, and deep canyons. The Guadalupe Escarpment, including Lonesome Ridge, is particularly spectacular. Elevations in the CRA vary from 2,900 feet, where the Pecos River flows into Texas, to 7,060 feet at the top of Chimney Peak in southwest Chaves County.

CLIMATE AND AIR QUALITY

The CRA has an arid to semiarid continental climate with mild winters and hot summers. Average annual precipitation ranges from 10 to 16 inches. Over half the yearly precipitation falls during July, August, and September when moist air masses move into the region from the Gulf of Mexico. Fall, winter, and spring are relatively dry seasons. There is a wide range in the amount of yearly rainfall. Conditions may vary from severe drought to severe and frequent flooding. The lowest rainfall on record was 2.2 inches in 1917. The maximum recorded rainfall of 32.4 inches occurred in 1940.

The average annual temperature is 62°F. Maximum temperatures average 92°F in July, although temperatures in excess of 100°F are frequent. Minimum temperatures average 28°F in January, although temperatures do occasionally dip below 0°F. The average growing season ranges from 220 days in the eastern plains to 180 days in the foothills to the west.

Wind speeds average about 12 miles per hour (MPH) with spring (March-May) being the windy season. Dry gusty winds, predominantly from the west, may exceed 30 MPH. These winds, blowing across dry soils, occasionally cause afternoon dust storms and is the primary cause of air pollution (dust) in the Resource Area. Mining and oil and gas operations also contribute to air pollution. Potash mines produce emissions consisting of potassium chloride, sodium chloride, and silicon dioxide, suspended in water vapor. The release of hydrocarbons during the various phases of oil and gas production and the burning of oil field wastes contribute to air pollution.

The CRA has been designated an attainment area for total suspended particulates due to a combination of control processes and reduced production in the potash industry.

LAND TENURE

The CRA administers approximately 2.2 million acres of public surface estate (see Table 1-1) Carlsbad RMP Area. Public lands are fairly well consolidated in Eddy County and the Western portion of Lea County while a scattered land pattern predominates east Lea County and southwest Chaves County.

RETENTION

There are three land retention classification areas within the CRA pursuant to the Classification and Multiple Use (C&MU) Act of September 19, 1964. The first to take place was NM 0560202, the second was NM 929, and the third was NM 2639. All three classifications segregate the lands from appropriations under the agricultural land laws (43 United States Code (USC) Part 7, 43 USC Part 9, and 25 USC 334), and from sale under Section 2455 of Revised Statutes (43 USC 1171).

There are two amendments to NM-929 that affect some lands within the Box Canyon Planning Unit Management Framework Plan (MFP). The amendments further segregate the subject lands from all forms of appropriation under the public land laws, including the general mining laws, but not from the mineral leasing laws.

Both amendments state that lands which may become public land in the future are classified for multiple-use management if they are within the boundaries of these classifications. These two retention classification amendments cover most of the Federal lands within the CRA.

The subject lands are open to all other forms of appropriations. The lands involved were segregated from the agricultural land laws because they were not considered suitable for agricultural development. This is due in part to poor soil quality, lack of available water for any irrigation, and the small acreage restrictions of the agricultural land laws. Since practically all of the water rights in the CRA have been fully appropriated, there is no water available for any additional agriculture development.

Another intent behind the segregations from entry was to preserve the well blocked portions of the CRA.

As a matter of information, the Federal Land Policy and Management Act (FLPMA) of 1976 repealed all the laws from which the above C&MU classifications segregated the lands except for the Desert Land Entry Law of March 3, 1877, as amended, and the General Mining Law of 1872.

It is an objective of this Resource Management Plan (RMP) to modify and revoke portions of the existing C&MU classifications in the CRA as authorized by FLPMA, Title II, Section 202 (c)(9)(d).

DISPOSALS

The East Eddy-Lea Management Framework Plan (MFP) (BLM 1979) identified 4,236 acres of public land as potentially suitable for sale, and approximately 43,200 acres potentially suitable for exchange with the State of New Mexico. As of October 1, 1985, no lands had been sold. An exchange of 2,240 acres of Federal land to support the Brantley Dam project has been completed. Additional lands in the CRA which were not classified for retention, but are presumed to have potential for disposal, include lands immediately surrounding urban areas which may be needed for community expansion. There is some potential for widespread land exchanges with the State of New Mexico and private landowners to adjust land ownership for more efficient management.

There is a management objective of Carlsbad Caverns National Park to acquire a 320-acre private inholding belonging to Mr. L. E. Sloan. The proposed acquisition would involve a land exchange between Mr. Sloan and Bureau of Land Management (BLM). BLM would then withdraw the lands for administration by the National Park Service (NPS). An exchange of this nature is considered as serving national interests by eliminating private inholdings in a national park as authorized in 43 Code of Federal Regulation 2240.0-3(f) and within the BLM Exchange Policy.

BLM is also proceeding with an exchange on behalf of the Department of Energy (DOE). The purpose of this exchange is to compensate the State Land Office (SLO) for two sections of State land which are within the Wast Isolation Pilot Plant (WIPP) proposed withdrawal. The lands being studied for possible selection by the SLO have been preliminarily determined to be suitable for the proposed exchange.

AQUISITION

Currently there are not acquisition actions pending.

WITHDRAWALS

A total of approximately 39,400 acres have been withdrawn from public use for administration by other governmental agencies. Withdrawals in effect include Bureau of Reclamation (BR), Brantley Dam, 36,000 acres, DOE, WIPP Site, 640 acres, Department of Defense (DOD), Gnome Site, 640 acres, State of New Mexico agencies 1,920 acres. The Federal Energy Regulatory Commission (FERC), BLM and the Forest Service (FS) have withdrawn approximately 200 acres for various uses including powersites, water reserves, administrative sites and Potash Resources. An additional 9,600 acres to support WIPP's pending congressional action for withdrawal. When this action occurs the total acres of public land withdrawn for public uses will be 49,000 acres. Upon completion of the Brantley Dam project, those lands which are no longer needed for the project will be returned to BLM administration and reopened to the public land laws. The (WIPP) site located east of Carlsbad and which is operated by the DOE as a pilot program for disposal of transuranic (low level radioactive) waste. The site presently occupies 640 acres of public land withdrawn for exclusive use.

The BLM in conjuction with other agencies is reviewing all current land withdrawals. Those withdrawals which are no longer needed for the purpose they were withdrawn, will be returned to BLM Administration with the concurrence of the other agency.

A listing of all existing withdrawal review cases appear in Appendix B-2.

RECREATION AND PUBLIC PURPOSE (R&PP)

The BLM administers seven R&PP leases in the CRA. Four are for sanitary land fills; the remainder are for a shooting range, a motocross track, and a correctional facility. Under current consideration is an R&PP application for the Artesia Archery Club.

RIGHTS-OF-WAY

The CRA has an active rights-of-way program which directly supports the activity of the oil and gas industry. An average of 230 energy-related and 12 non-energy use authorizations are processed each year.

MINERALS AND ENERGY RESOURCES

GEOLOGY

The entire CRA lies within the Permian Basin, with deposits formed by shallow sea deposition and subsidence.

Structural features encountered within the Permian Basin of southeast New Mexico include the Northwest Shelf, the Permian Reef, the Delaware Basin, the Tatum Basin, and the Central Basin Platform. The Northwest Shelf extends from the Capitan Reef northward and contains the majority of the large oil field discoveries in southeastern New Mexico.

The Permian Capitan Reef was formed during a period of shallow water and is nearly circular in shape, elongated somewhat in a northwest to south direction with the northern one-third located in Eddy and Lea Counties, New Mexico. The reef enters New Mexico in the southwestern corner of Eddy County, forming a part of the Guadalupe Mountains, and is traced northeastward to White's City and Carlsbad where it swings east. As it enters Lea County, it bends toward the southeast and leaves New Mexico near the southeastern corner of the County. It is approximately 12 miles wide at the widest part. Many caves occur within the reef area, including Carlsbad Caverns. The reef was formed mainly by lime-secreting algae.

The portion of the Delaware Basin within the CRA is found mostly in southern Eddy County. It represents the area of maximum subsidence in the New Mexico portion of the Permian Basin, and it is here that the Permian strata are thickest. Extensive drilling in the Delaware Basin has revealed large deposits of natural gas at depths as great as 14,000 feet.

The Tatum Basin is located in northern Lea County, centered around the town of Tatum, New Mexico, on the northwest shelf of the greater Permian Basin. The basin was formed during Early Pennsylvanian time. There are about 40 oil and gas fields present in this area.

The Central Basin Platform extends in a north-northwesterly direction from West Texas into southeastern Lea County, New Mexico. It is a broad belt of uplifted Precambrian rocks and strata of Cambrian to Pennsylvanian age. Only the northwestern portion of the platform is in New Mexico. It was raised from the sea bottoms in late Mississippian or early Pennsylvanian time and over it the sedimentary formations were broadly arched. Erosion accompanied and followed uplift and a thick series of Pennsylvanian strata was deposited in adjacent basins. In places, erosion proceeded to the Precambrian basement rock. Subsidence followed uplift and early or middle Permian sediments were deposited on Precambrian rocks and on the truncated edge of the Precambrian strata (Stipp 1960).

As a result of deposition during the Paleozoic period, strata containing deposits of oil and gas, potash, salt, and other economically valuable mineral materials occur in various parts of the CRA in abundance.

Important reserves of oil and gas occur in most parts of the stratigraphic section with the exception of the Mississippian. Although thousands of wells have been drilled in the CRA in the past 45 years, examinations of drilled formations reveal that only a small percentage of the total volume of rock has been tested.

OIL AND GAS

New Mexico ranks fourth among all states in the production of natural gas, and fifth in production of petroleum products. The New Mexico Oil Conservation Division (NMOCD) reports that about 90 percent of the State's petroleum and 50 percent of the natural gas production is extracted from that portion of the Permian Basin located in southeastern New Mexico. About 42 percent of the wells in the CRA are on Federal leases. Table 3-1 shows production from Federal leases in 1984. All lands in the Federal mineral estate are open to oil & gas leasing except for 11,680 acres of withdrawals. These withdrawals include the Gnome site, the State Militia site, the WIPP site and Little Walt Canyon quarry site. The majority of the Federal mineral estate has been leased.

The entire Maroon Cliffs SMA is within the Big Eddy Unit which is a nonelementation oil and gas unit. This means that existing leases will be held by production anywhere within the boundaries of the unit and NSO stipulations cannot be added to existing leases for the foreseeable future.

TABLE 3-1

OIL AND GAS PRODUCTION FROM FEDERAL LEASES IN THE CARLSBAD RESOURCE AREA IN 1984

Number of Producing Wells	Gas (MCF)[1]	Oil (Barrels)	Percent Federal Wells
Eddy County			
4,871	106,021,290	5,534,779	61 (gas) 51 (oil)
Lea County			
5,156	67,663,811	9,293,980	25 (gas) 18 (oil)
TOTAL:			
10,027	173,685,101	14,828,759	40 (gas) 23 (oil)

Sources: NM Oil Conservation Division, NM Oil and Gas Association.

[1] Thousand Cubic Feet (MCF)

Estimates for the duration of production of oil and gas fields is highly speculative. The average expected life of an oil well is about 25 years. In the unlikely event that no more wells were drilled, the existing fields in the CRA would probably be exhausted within 50 years. Table 3-2, shows that production and the size of new pools has declined and that this trend will likely continue.

Four hundred and eleven Applications for Permit to Drill (APD) wells on Federal land were processed in Fiscal Year (FY) 84. Maps of leased areas and wells are located in the BLM Roswell District and CRA offices. As of March 1984, there were 353 oil and gas operators who held 2,189 Federal leases and

TABLE 3-2

OIL AND GAS PRODUCTION TRENDS

	0 to 5,000 ft. (0 to 1,515 m)		5,002 to 10,000 ft. (1,525 to 3,050 m)		10,001 to 15,000 ft. (3,050 to 4,575 m)		Greater Than 15,000 ft. (4,575 - m)	
	Mean Field Size, 1,000 equiv. barrels of oil	Net/ Test Well	Mean Field Size, 1,000 equiv. barrels of oil	Net/ Test Well	Mean Field Size, 1,000 equiv. barrels of oil	Net/ Test Well	Mean Field Size, 1,000 equiv. barrels of oil	Net/ Test Well
1965-1969	1,820	92	2,280	250	2,230	390	360	60
1970-1974	180	14	590	120	1,100	310	130	11
1975-1979	500	25	890	130	970	260	*	
1980-1984	410	24	670	90	680	190	*	
1985-1989	350	20	510	70	520	140	*	

*Insufficient data for forecast. (All dates after 1982 are forecasts only.)

operated 9,102 wells and 2,959 facilities in the CRA. Sixty-six permits to conduct geophysical operations were issued during FY 84.

All leases in a Known Geologic Structure (KGS) are sold by competitive bids. Maps of the KGS in the CRA, as of October 1984, are located in the Mineral Resource Assessment for the Carlsbad RMP (BLM 1984).

Much of the CRA has been developed or explored for oil and gas, and there are numerous producing oil and gas fields present. Southwestern Chaves County has one small field. Oil and gas deposits generally do not occur west of Eddy County, possibly due to mountain building forces to the west which may have destroyed the deposits.

Although Lea and Eddy Counties have been extensively explored for oil and gas, there is sufficient unexplored acreage left to provide drilling opportunities for years to come. All of the federal mineral estate is prospectively valuable for oil and gas development and has either "high" or "moderate" potential. These conclusions are based upon data on KGS and oil and gas field locations. Subsurface geologic formations within a KGS are considered as areas of high oil and gas potential. Areas outside a KGS are considered as moderate potential in CRA. Boundaries of a KGS change as additional drilling activity provides more information on subsurface structures and map limits.

Some possible future exploration targets include:

Delaware Basin. The Morrow gas sands in the Delaware Basin are as deep as 15,000 feet, and wells cost in the millions to drill. If the price of gas rises, the drilling of these deep wells might become more common.

Southwestern Chaves County. This area is on the eastern side of the Sacramento Mountains and the earth movements which raised the mountain may have forced the hydrocarbons out. If exploratory wells are successful, more drilling in this area could result.

All of CRA. One method of exploration is to reopen previously abandoned wells to new depths and this can happen anywhere abandoned wells exist.

LEASABLE SOLID MINERALS

Potash

Potash minerals are used to produce one of the three major ingredients potassium in fertilizers. About 85 percent of the nations domestically produced potash comes from CRA.

There are twelve potash ore zones of Permian Age in the Carlsbad Mining District, all in the Salado formation. Six of the ore zones have been mined. The first ore zone, found at around 900-1,000 feet below surface, has been the principal source of potash in the District but production is now declining. The third ore zone, found at around 1480 feet, has been in production in the northwest part of the potash District since 1976. The fourth ore zone, found at around 1460 feet, is rich in langbeinite in the southern part of the District. [These zones may be an important source of langbeinite in the future.] The fifth ore zone, found at around 1400 feet, is mostly langebeinite with occasional sylvite and is found in the central part of the District. The seventh ore zone, found at around 1390 feet is sylvite and is found mainly in the central part of the District. The tenth ore zone, found at around 1300 feet, is (after the first zone) the most consistent ore zone in grade, thickness, and extent. This zone represents the remaining major sylvite reserves in the District. Detailed descriptions of the ore zones can be found in the Generalized Columnar Section and Radioactivity Log, Carlsbad Potash District by C. L. Jones, C. G. Bowles, and A. E. Disbrow (1954).

There are five companies mining and refining potash in the CRA. They are Lunberg Industries, International Minerals and Chemical Corporation, Western Chemicals, Inc., New Mexico Potash, and Amax Chemical Corporation. Mississippi Chemical Corporation stopped mining in 1983, and National Potash Company stopped mining in 1982. In 1982, seven companies in the CRA produced 88 percent of the potash produced in the United States. About 13.8 million tons of potash were mined from 123 Federal potash leases during FY 84. The value of the potash sold from Federal leases was $178,566,900 of which the Federal Government collected $5,984,520 in royalties. The poor domestic market and the increasingly competitive international market have caused cutbacks in production and employment at all of the operating mines within the last several years. Ore grades are also decreasing at the Carlsbad Mines.

At the present time, there are no active potash prospecting permits in the CRA. Potash leases cover 165,860 acres. A map of Federal potash leases may be obtained from the Roswell District Office.

The long-range outlook for the New Mexico potash industry is unclear. The world's need for potash continues to increase as population grows. However, the greatest demand is in third world countries, which are least able to afford potash. The United States's share of the world market continues to shrink as new mines are brought on line with higher grade ore reserves nearer to the growing third world markets. The Carlsbad mines have a somewhat secure market in the western United States. However, high transporation costs make it difficult for the Carlsbad mines to compete with foreign suppliers even in the United States.

Other Leasable Solid Minerals

Sodium

Sodium deposits occur in the salt section of the Salado Formation, which ranges from 1,250 feet thick on the east side of Lea County to around 100 feet near Carlsbad. The depths to the salt section are from around 1000 feet on the east side to around 400 feet on the west side near Carlsbad. (See Appendix C-1).

Sodium is recovered mainly by solution mining. Demand for sodium is closely associated with oil and gas drilling activity. The sodium is used to saturate brine used for drilling through the large evaporite sections encountered in oil and gas drilling throughout the Permian Basin. Solution mining produced 452,885 barrels of saturated brine from the four Federal sodium leases during Fiscal Year 1983. The limiting factor for sodium production is the lack of water available for solution mining, not the lack of known salt beds. There are currently three salt operations recovering solid salt for cattle and road use.

Sulphur

The area south of Whites City has been prospected for sulphur for at least 30 years. No deposits of sulphur large enough to be economically mined have been found. However, prospecting efforts show the area is prospectively valuable for sulpher and exploration will probably continue. There are presently 33 sulphur prospecting permits issued in the CRA, but no sulphur leases have ever been issued.

Phosphate

Bat guano occurs in many caves but currently there is no mining activity.

SALABLE MINERALS

The CRA has abundant deposits of limestone, dolomite, sand, gravel, and caliche but the quality is variable throughout the CRA. Detailed discussions and maps of aggregate resources are described in Geology and Aggregate Resources District II, New Mexico State Highway Department (1972).

Various limestone and dolomite formations through southwestern Eddy and Chaves County offer an abundant supply of quarry rock. The rock from the San Andres and Capitan Limestones are probably the most desirable. However, the quality of rock in the Tansill, Yates, Seven Rivers, and Grayburg formations (in the immediate back-reef zone) is equally as good.

The stream systems west of the Pecos have generous supply of limestone gravel. The

Pecos River area south of Carlsbad contains gravel. The Blackdom and Orchard Park surfaces have slightly higher quantities of quartzose pebbles, but usually the gravels are predominantly limestone. Usable gravel deposits may be found along the margins of the Pecos River floodplain near the confluences of old tributaries and the River channel. Known usable gravel deposits in Lea County are limited to small deposits east of Eunice and north of Tatum.

Caliche deposits are abundant and wide spread in the CRA. Good quality caliche occurs in the Llano, Mescalero, Blackdom, Bell Lake, and Eunice surfaces.

Caliche is needed to surface most oil and gas well pads and most access roads. Demand for caliche is closely associated with oil and gas exploration and development. Public lands supply approximately 60 percent of all caliche mined in southeastern New Mexico.

There are 941 active material pits in the CRA and the majority of these are caliche pits. The locations of pits are recorded on maps in the CRA office. There were 179 mineral material sales and 149 free use permits issued in Fiscal Year 1984. Table 3-3 provides information about these sales and permits.

Wind-blown filler sand is widespread east of the Pecos River but scarce to the west. Blow sand is regularly sold from only one location.

The potential for development of all these materials occurs only near points of consumption.

LOCATABLE MINERALS

Metallic minerals are not known to occur in abundance in the CRA. Nonmetallic minerals occurring in abundance in the CRA which may qualify for location under the General Min-

TABLE 3-3

FEDERAL MINERAL MATERIAL SALES AND FREE USE PERMITS
IN THE CARSLBAD RESOURCE AREA DURING 1984

	SALES			FREE USE PERMITS*		
	Number	Amount cu.yds.	Receipts	Number	Amount Cu.yds.	Value
Caliche	166	280,698	$255,660	142	1,884,942	$1,636,025
Sand/Gravel	2	8,164	1,290	3	68,200	11,370
Other (river rock, quarry rock, etc.)	11	6,087	878	4	165,000	66,500
TOTAL	179	294,949	$257,828	149	2,118,142	$1,713,895

Source: BLM files

*Figures are for amount requested.

ing Laws are gypsum and certain varieties of carbonate rocks. These minerals could qualify as being locatable either because they meet the "special use" or "unusually high purity" requirements.

Gypsum deposits occur in the Rustler and Castile formations and the Artesia group. Gypsum crops out from the Yeso Hills south of Carlsbad to the Texas border. In New Mexico, there was one attempt to mine gypsum for use in manufacturing wall board in 1959. The wall board was manufactured in El Paso. This operation was abandoned due to high transportation costs.

High-calcium limestone deposits in the CRA have been found in the Victorio Peak member and parts of the Radar and Lamar Limestone members of the Bell Canyon for- mation and the Capitan Limestone formation. High-calcium limestone is used in the manufacturing of portland cement. The economic feasibility of developing this material depends on close proximity to railroad transportaton.

Dolomite or dolomitic limestone of the Capitan Reef is not exposed in large quantities in the CRA. The underlying Goat Seep Limestone crops out in the relatively inaccessible south central part of the Guadalupe Mountains. It is reported to be chiefly dolomite or dolomitic limestone. High purity dolomite is used to manufacture plaster and mortar. There has been no development of these minerals in the CRA to date.

RANGELAND RESOURCES

SOIL AND WATER

Soils vary from mostly very shallow in the western portion of the area to mostly deep along the Pecos River. The shallow soils occur on rolling limestone hills, an area where soils are generally less than 20 inches in depth. The rocky composition of the soil, combined with shallow depths, increases runoff which increases the water erosion hazard in the associated draws and drainages. Soil textures are mostly loamy and high concentrations of calcium carbonate occur in the substratum. In addition to soils formed from limestone parent materials, large areas of soils have formed from gypsiferous parent material.

Most of the soils in the east side are mostly level with sandy textures and high concentrations of calcium carbonate in the substratum. These sandy soils are highly susceptible to wind erosion. Wind action has produced an undulating topography with frequent dunes. Areas of steep rocky soils and gypsum soils are also present.

The Gyp Complex soils are highly susceptible to erosion. The largest gyp complex area is located south of White City and includes the Yeso Hills area. Once disturbed, these gypsum soils are extremely difficult to revegetate due to their droughtiness and high salt content.

Detailed information on soils in the CRA is available in the Soil Survey of Eddy Area N.M. (SCS 1971), Soil Survey of South- west Chaves County (SCS 1980) and Soil Survey of Lea County (SCS 1979).

Erosion and Sedimentation

Approximately 62 percent of the west side (632,010 acres) is in the stable erosion class; 31 percent (310,060 acres) is in the slight erosion class; 7 percent, or approximately 72,357 acres, is in the moderate erosion class. The watershed condition is stable on approximately 90 percent of the area while 10 percent of the area is slightly improving.

The gyp complex range site has the highest sediment yield rate (0.5 - 1.0 ac. ft/sq mi/yr). The remaining range sites in the west side planning area lose between 0.2 and 0.5 ac. ft/sq mi/yr. Range sites are discussed on page 3-11.

Reclamation Potential

Almost all oil and gas wells and most roads in the CRA are surfaced with caliche. Normally, reclamation of these areas involves leaving the caliche material on the road or pad and ripping and reseeding the area. Since caliche is quite infertile, the areas treated in this way rarely regain their former productivity, and potential for rehabilitation is low.

The mud pits used for oil and gas drilling contain large concentrations of salts. When these areas are reclaimed, the salts prevent any significant amount of plant growth (Oil and Gas Leasing in the Roswell District, Environmental Assessment (EA), BLM, 1981)

Surface Water

Approximately 76 percent of the CRA is in the Pecos River Basin, 23 percent is in the Lea Plateau Basin and one percent in the Salt Basin. The Salt Basin and the Lea Plateau Basin are closed basins. Major intermittent tributaries of the Pecos River from the west include Four Mile Draw, Seven Rivers, Rocky Arroyo and Dark Canyon. The Black Delaware, Rio Penasco and Rio Feliz Rivers are the only perennial tributaries. There are no well-defined tributaries from the east. Brantley Dam, which is currently being constructed, will provide 520,000-acre/feet of storage for flood con- trol and irrigation along the Pecos River.

The estimated mean annual runoff for the planning area ranges from approximately 1.5 inches in the mountains to 0.4 inch in the valleys and plains. Intense thunderstorms from July through September normally contribute about 60 percent of the annual precipitation. These thunderstorms are the major source of flow in numerous intermittent drainage channels.

Detailed water quality data for the Pecos River is available in Water Quality Data for New Mexico, U. S. Geologic Survey, 1979.

In general, the water quality of the Pecos River deteriorates as it flows downstream. Below Malaga Bend the Pecos is quite saline due to discharge from brine springs and seeps. Limited available data indicates better water quality in intermittent tributary streams.

Executive Order (EO) 11988 requires BLM to avoid adverse impacts associated with the occupancy and modification of 100-year floodplains and to avoid supporting of floodplain development whenever there is a practical alternative. Development in 100-year floodplains is avoided unless there is no reasonable alternative; however, there is currently no stipulation attached to oil and gas leases limiting floodplain development.

Riparian areas are discussed in the wildlife section. There are about 4,500 acres of riparian habitat in the CRA. About 4,230 acres are along the Pecos River, 200 acres are around six perennial springs, 20 acres along the Black River, and 10 acres along the Delaware River. BLM water use inventory data from the springs indicates total dissolved solids, concentrations within Environmental Protection Agency (EPA) standards for livestock and wildlife use. Little data is available about the hydrology of these areas. An inventory of all riparian and aquatic habits is proposed (see Chapter 2, Wildlife Habitat).

There are about 350 unlined salt water disposal pits in the CRA. There are also many emergency pits. Reserve pits are used for each new well that is drilled. Existing management and regulations (see Oil & Gas Chapter 2) are designed to protect water quality; however, accidents or improper procedures could cause local groundwater quality deterioration or spills into surface water. There are four sanitary land fills on Federal land. Two are permitted to the cities of Carlsbad and Artesia, and two are permitted to Eddy County. It is policy not to drain hazardous materials in any landfills and to date, there has been no hazardous waste found at these sites.

Groundwater Aquifers

Aquifers within the planning area containing fresh to slightly saline water include the

Rustler, Castile, Tansill, Yates, Seven Rivers, Queen, Grayburg, Artesia, Ogallala, Capitan and San Andres Limestones, Glorieta and Santa Rosa Sandstone, and the Dockum Group. The average depth to groundwater is less than 200 feet in more than 50 percent of the CRA (Water Resources of New Mexico, State Planning Office, 1967).

The general direction of groundwater movement east of the Pecos River is in a south southwesterly direction toward the River while west of the River the general direction of groundwater movement is in an easterly direction.

An estimated 480 acre-feet of water are consumed by livestock and 11 acre-feet are consumed by wildlife in the CRA. A water use inventory to locate and quantify all water sources and uses on public land is currently being conducted. Also, large quantities of water are used in oil and gas drilling and production. Assuming that an average of 400,000 gallons of water is required for each new well that is drilled, about 160,000,000 gallons of water is used for oil and gas drilling in the resource area each year. Fresh water and salt water sources are used for these purposes. In addition, large amounts of water are used for secondary recovery operations.

Groundwater Quality

Most groundwater contains more than 1,000 milligrams per liter (mg/l) of total dissolved solids (TDS), with some aquifers having concentrations greater than 35,000 mg/l. Limited BLM water quality data, from samples of wells in the CRA, indicates that total dissolved solids concentrations are within EPA standards for wildlife and livestock consumption. However, much of the groundwater in the planning area is unacceptable for human consumption due to high dissolved solid content and the amount of sulfate. (Maps indicating groundwater quantity and quality are available in the CRA.)

VEGETATION

In the early and mid-1800's, the southeastern plains of New Mexico were vegetated by shortgrass prairies (Whitfield and Beuter 1938; Dick-Peddie 1965). These grassland communities were dominated by grama grasses (black, blue, gyp, hairy and sideoats), bluestems, and dropseeds. Some low densities of brush were scattered throughout the prairies. Dramatic changes in vegetation composition, influenced by a combination of climatic changes (Wedel 1957; Hastings and Turner 1965), cessation of natural wild prairie fires (Humphrey 1952; Wright 1974), and poor livestock management (Haskell 1945; Brown 1950) caused creosote, mesquite, and snakeweed to increase, thus reducing the amount of soil moisture available for the production of grasses and forbs (Herbel 1965).

Range Sites

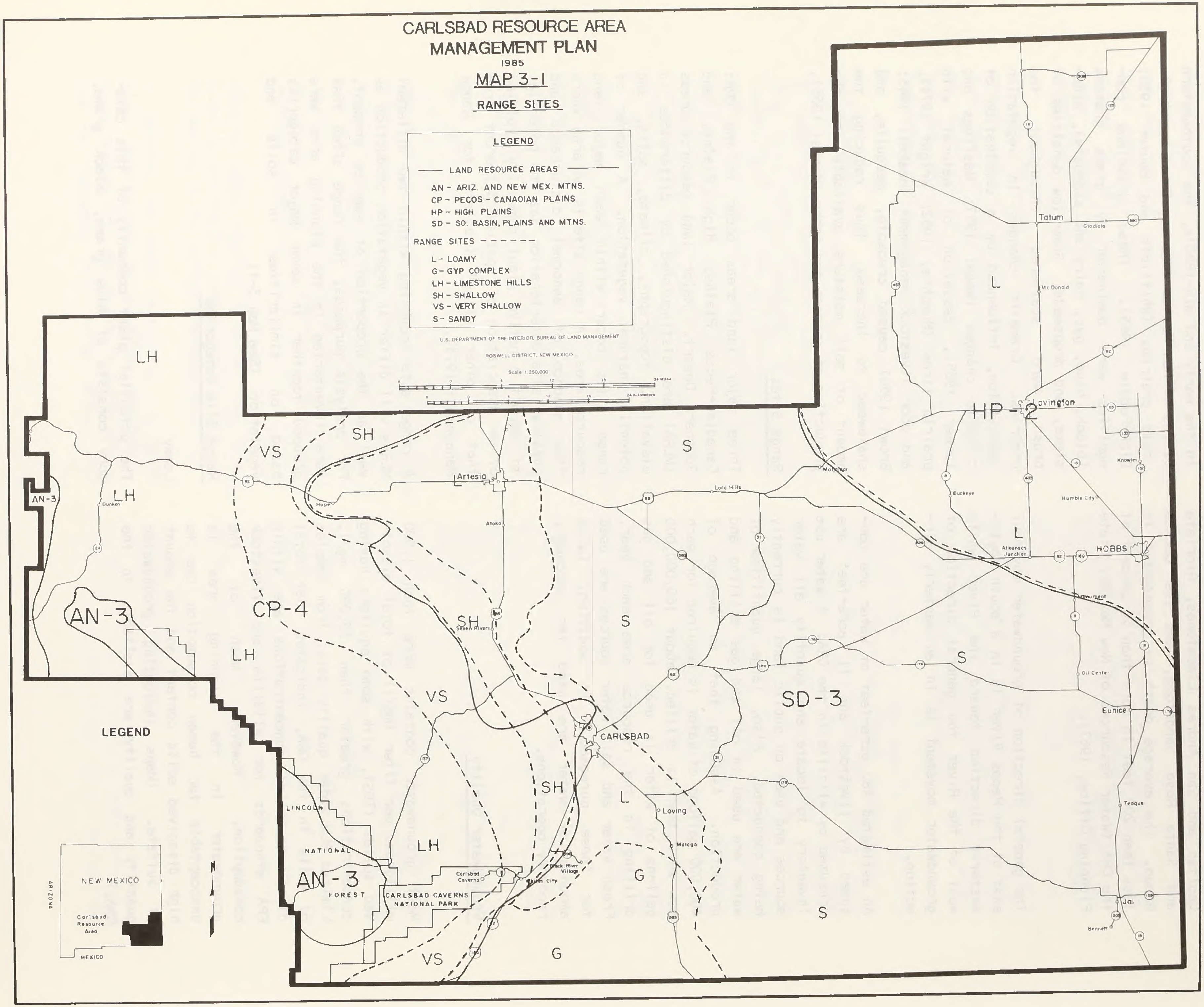
Three major land areas occur in the CRA: Canadian-Pecos Plains, High Plains, and Southern Desert. Major land resource areas (MLRA) are distinguished by differences in elevation, topography, climate, soils, and potential natural vegetation. A number of range sites occur within each major land resource area. A range site is an area where "the absence of abnormal disturbance and physical site deterioration has the potential to support a native plant community typified by an association of species different from that of other sites" (Society for Range Management 1974).

A range site occurring within two different MLRAs will differ in vegetation production as well as the proportion of species present. For analysis purposes, the range sites that were inventoried in the planning area were grouped together in seven major categories based on similarities in soils and vegetation (See Map 3-1)

Range Site Categories

Loamy

The potential plant community of this category consists of blue grama, black grama,



CARLSBAD RESOURCE AREA MANAGEMENT PLAN

1985

MAP 3-1

RANGE SITES

LEGEND

—— LAND RESOURCE AREAS ——

AN - ARIZ. AND NEW MEX. MTNS.
CP - PECOS - CANAOIAN PLAINS
HP - HIGH PLAINS
SD - SO. BASIN, PLAINS AND MTNS.

RANGE SITES - - - - - -

L - LOAMY
G - GYP COMPLEX
LH - LIMESTONE HILLS
SH - SHALLOW
VS - VERY SHALLOW
S - SANDY

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT
ROSWELL DISTRICT, NEW MEXICO
Scale 1:250,000

6 0 6 12 18 24 Miles
6 0 6 12 18 24 Kilometers
HP-2
SD-3
CP-4
AN-3
L
G
LH
SH
VS
S
Tatum
Glodiola
McDonald
Lovington
Knowles
Humble City
Buckeye
Maljamar
HOBBS
Arkansas Junction
Monument
Oil Center
Eunice
Teaque
Jal
Bennett
Loco Hills
Artesia
Atoka
Hope
Dunken
Seven Rivers
CARLSBAD
Loving
Malaga
Black River Village
Whites City
Carlsbad Caverns
CARLSBAD CAVERNS NATIONAL PARK
LINCOLN NATIONAL FOREST
LEGEND
NEW MEXICO
Carlsbad Resource Area
ARIZONA
MEXICO

sideoats grama, galleta, and tobosa. Winterfat, fourwing saltbush, and yucca are the principal shrubs. Forbs include croton and desert holly. Brush species such as snakeweed, mesquite, and cholla cactus increase as ecological condition decreases.

Gyp Complex

The potential plant community of this category consists of gyp grama, gyp dropseed, blue, and black grama grasses, and the forb, coldenia. Shrubs and forbs are a minor component of the plant community. This site is easily damaged by heavy grazing pressure which causes a loss in cover and deterioration of the plant community.

Limestone Hills

The potential plant community of this category consists primarily of grasses such as black grama, sideoats grama, metcalf muhly, mountain muhly, and tridens. Yucca, sacahuista, mariola, and catclaw mimosa become more prevalent on north and east slopes. In deteriorated condition, this site will show an increase in woody plants and grasses, such as threeawns and tridens.

Shallow

The potential plant community of this category consists of black grama, sideoats grama, hairy grama, bush muhly, and sand dropseed. Cresotebush, mesquite, mariola, and catclaw mimosa also occur on the site. In a deteriorated condition, unpalatable species such as fluffgrass, and creosotebush, mesquite, and catclaw mimosa will increase.

Very Shallow

The potential plant community of this category consists of black grama, sideoats grama, tridens spp., blue grama, dropseed spp., sacahuista, yucca spp. sotol, and catclaw mimosa. In a deteriorated condition, fluffgrass, tridens spp. sacahuista, yucca and other unpalatable woody species will increase.

Sandy

The potential plant community of this category consits of dropseeds (sand, spike, and mesa), bluestems, and black grama. Yucca, fourwing saltbush, and shinnery oak are the principal shrub species. As deterioration occurs, plants such as threeawn grass and mesquite will increase and soil hummocking will occur.

For more detailed information about the MLRAs and range sites present in the plan area, refer to the Soil Conservation Service (SCS) Range Site descriptions located at the CRA office.

Ecological Condition

Resource inventories were conducted from 1983 to 1984 to determine the ecological condition of the rangeland and what level of management would best fulfill resource needs and human requirements.

The condition of 42,150 acres of scattered and isolated tracts is undetermined. These tracts will be inventoried as funding permits, or as conflicts are identified. Change in grazing practices may be needed to improve range condition where it is less than satisfactory.

Ecological condition class ratings are based on the SCS's potential plant community description for a particular range site. The descriptions were compared to the existing species composition. Table 3-4 displays the Federal acres in each ecological condition class by range site.

LIVESTOCK GRAZING

The area west of the Pecos contains 174 grazing allotments which cover approximately 960,000 acres of public land with 151 permittees currently licensed to

TABLE 3-4
ECOLOGICAL CONDITION BY RANGE CATEGORY
(Federal Acres)

Ecological Condition Class	RANGE CATEGORY Limestone Hills	Very Shallow	Shallow	Gyp Complex	Loamy	Sandy	Total Acres	Percent
Excellent	13,200	0	0	0	0	0	13,200	1
Good	273,400	223,360	33,240	10,850	92,000	267,500	900,350	41
Fair	74,550	65,500	34,500	36,050	56,400	886,600	1,153,600	53
Poor	0	0	0	2,400	7,400	52,400	62,200	3
Undetermined	42,150[1]	0	0	0	0	0	42,150	2
TOTAL	403,300	288,860	67,740	49,300	155,800	1,206,500	2,171,500	
PERCENT	19	13	3	2	7	56		100

[1] "C" Category Allotments

Source: BLM CRA - Inventory files, 1983-1984 and East Roswell Grazing EIS, 1980 graze livestock. Approximately 5,000 acres are currently unallotted. Ninety-six grazing allotments east of the Pecos River were previously covered in the East Roswell Grazing (EIS) Environmental Impact Statement (1980).

The current active grazing preference in the area is 216,369 Animal Unit Months (AUMs). By class of livestock, the preference is licensed as 83 percent cattle, 16 percent sheep and the remainder is licensed for other domestic livestock such as horses or goats. Most grazing is year-long. The cattle and sheep permittees are primarily cow-calf and ewe-lamb operations, respectively. Twelve allotments covering approximately 200,000 acres are currently under Allotment Management Plans (AMPs). Several of the existing AMPs still require substantial range land improvements before they will be fully implemented.

WILDLIFE HABITAT

The Habitat west of the Pecos River have been categorized by Standard Habitat Sites (SHSs) following Integrated Habitat Inventory Classification System (IHICS). There are eight SHS's for lands west of the Pecos River which are described and titled according to vegetation, land form, and soils (see Appendix D-11). Lands east of the Pecos River are grouped into major habitat types, as described in Appendix L-2 of the East Roswell Grazing EIS. Riparian and pseudoriparian habitat types comprise the smallest percentage of acreage, but are still the most important habitat for wildlife within the Resource Area. Table 3-5 shows acreages and percentages of SHS occurrence west of the Pecos River.

TABLE 3-5
STANDARD HABITAT SITES FOR THE CARLSBAD
RESOURCE AREA WEST OF THE PECOS RIVER

Standard Habitat Site	Acres on Public Lands	Percentage SHS West of Pecos
Pinyon/Juniper Grass Mountain	80,162	8.0
Mixed Shrub Hill	501,013	50.0
Psuedoriparian	50,101	5.0
Grass Flat	130,263	13.0
Mixed Shrub Rolling Upland	140,284	14.0
Mixed Shrub Gypsum Karst	90,182	9.0
Mesquite Sand Dunes	8,016	0.8
Riparian[1/]	2,004	0.2
	1,002,025	100

[1/] This does not include 2500 acres east of the Pecos River because it was previously addressed in the East Roswell Grazing EIS.

Special Habitat Features

Special habitat features were inventoried using existing files and field inspections. These features provide important supplemental food, cover, water, and space for a variety of wildlife in the CRA. A list of existing features are shown in Table 3-6. In addition to the special habitat features there are 62 water developments designed specifically for wildlife use. The BLM maintains 25 of these water developments and the other 37 are maintained by the Carlsbad Sportsman Club through a cooperative management agreement (CMA).

Wildlife species are very diverse and numerous within the CRA. The following discussions deal with lands west of the Pecos River. Information concerning wildlife east of the Pecos River is located in the East Roswell Grazing EIS (BLM 1979).

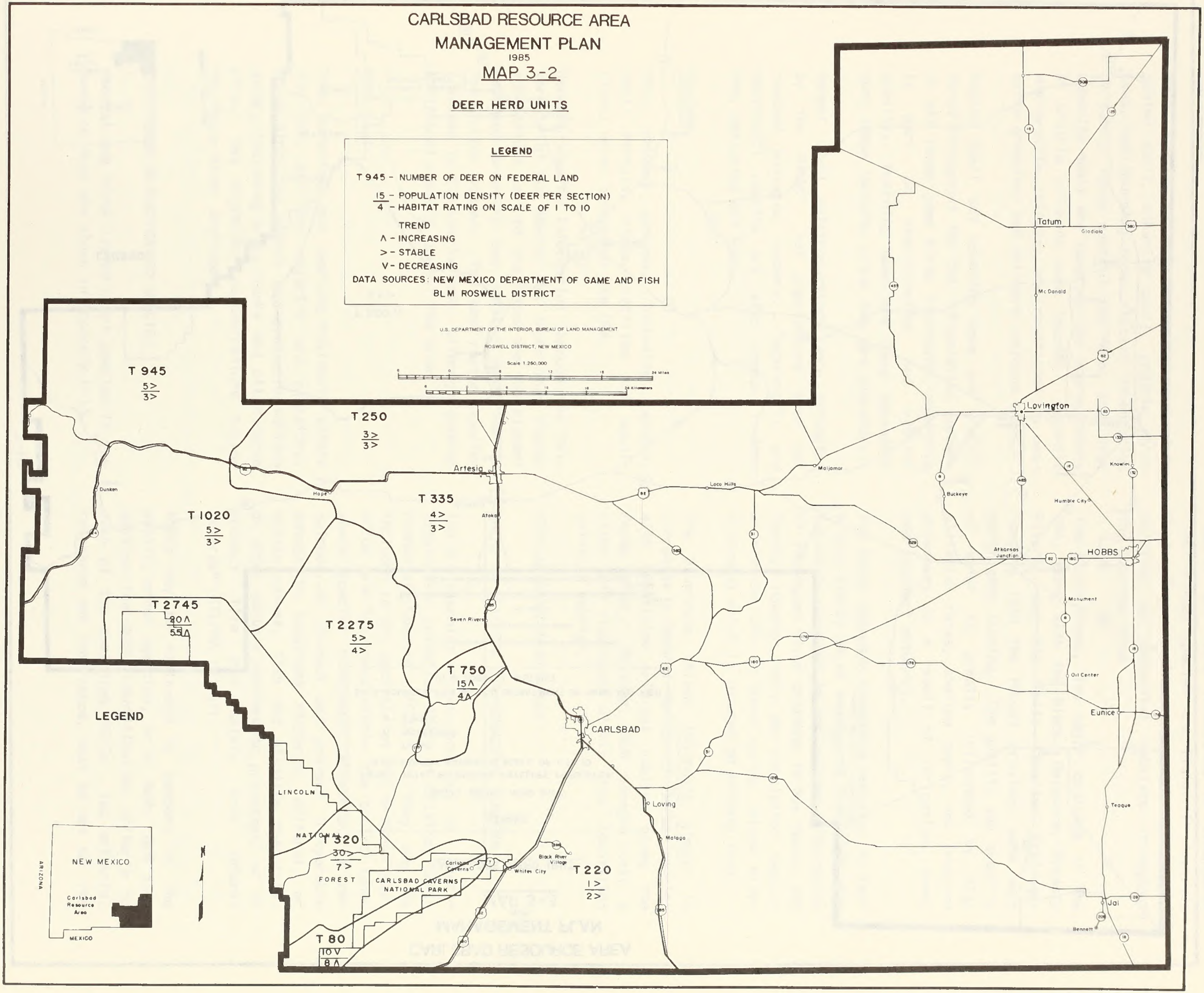
Big Game

Desert mule deer and pronghorn antelope are the major big game species occurring on public lands in the CRA. Approximately 9,100 desert mule deer and 200 pronghorn antelope inhabit public lands in west Eddy and southern Chaves counties. According to New Mexico Department of Game and Fish (NMDG&F) data, mule deer populations are currently at optimum levels, and are stable. Mule deer habitat is in fair condition with a stable trend. Heaviest deer concentrations are located in riparian and pseudoriparian areas comprising approximately 52,105 acres of public land. However, they also occupy portions of all SHS's. Pronghorn antelope populations are currently below optimum levels; however, numbers are increasing. They primarily occupy grass lands, mixed shrub rolling uplands, and mixed shrub hill SHS's (NMDG&F data). Pronghorn antelope habitat is in fair condition with a stable trend (NMDG&F data). Maps 3-2 and 3-3 show the herd units and estimated populations for deer and pronghorn, respectively.

Barbary sheep, mountain lion, and javelina inhabit public lands within the CRA, but not in large numbers. Population numbers are increasing, especially in mixed shrub hill SHS's. There are also occasional sightings of elk and turkey along BLM/National Forest boundaries within the pinyon/juniper grass mountain SHS.

TABLE 3-6
SPECIAL HABITAT FEATURES

Special Habitat Feature	# Inventoried	Use By Mannals	Birds	Herpto Fauna
Rock Cairns	13	Rodents	Raptors	Reptiles
Sink Holes	40	Lagomorphs Rodents	Raptors	Reptiles
Cliffs & Ledges	500	Rodents	Raptors	Reptiles
Dirt Tanks	103	All	All	Amphibians
Caves	196	Rodents Bats	Raptors	Reptiles
Playas	44	All	All	All
Tree Groves	290	All	All	All
Springs	5	All	All	All



CARLSBAD RESOURCE AREA MANAGEMENT PLAN

1985

MAP 3-2

DEER HERD UNITS

LEGEND

T 945 - NUMBER OF DEER ON FEDERAL LAND

15 - POPULATION DENSITY (DEER PER SECTION)
4 - HABITAT RATING ON SCALE OF 1 TO 10

TREND
Λ - INCREASING
> - STABLE
V - DECREASING

DATA SOURCES: NEW MEXICO DEPARTMENT OF GAME AND FISH
BLM ROSWELL DISTRICT

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT
ROSWELL DISTRICT, NEW MEXICO

Scale 1:250,000

6 0 6 12 18 24 Miles
6 0 6 12 18 24 Kilometers
T 945 5> 3>
T 250 3> 3>
T 1020 5> 3>
T 335 4> 3>
T 2745 20Λ 5.5Λ
T 2275 5> 4>
T 750 15Λ 4Λ
T 320 30> 7>
T 80 10V 8Λ
T 220 1> 2>
LEGEND
NEW MEXICO
Carlsbad Resource Area
ARIZONA
MEXICO
Tatum
Gladiola
McDonald
Lovington
Knowles
Maljamar
Buckeye
Humble City
Arkansas Junction
HOBBS
Monument
Oil Center
Eunice
Teague
Jal
Bennett
Loco Hills
Artesia
Atoka
Hope
Dunken
Seven Rivers
CARLSBAD
Loving
Malaga
Black River Village
Whites City
Carlsbad Caverns
CARLSBAD CAVERNS NATIONAL PARK
LINCOLN NATIONAL FOREST

CARLSBAD RESOURCE AREA MANAGEMENT PLAN

1985

MAP 3-3

ANTELOPE HERD UNIT

LEGEND

(ROCKY ARROYO HERD UNIT)

T 200 - TOTAL PRONGHORN ANTELOPE POPULATION
3.5 - HABITAT RATING ON SCALE OF 1 TO 10

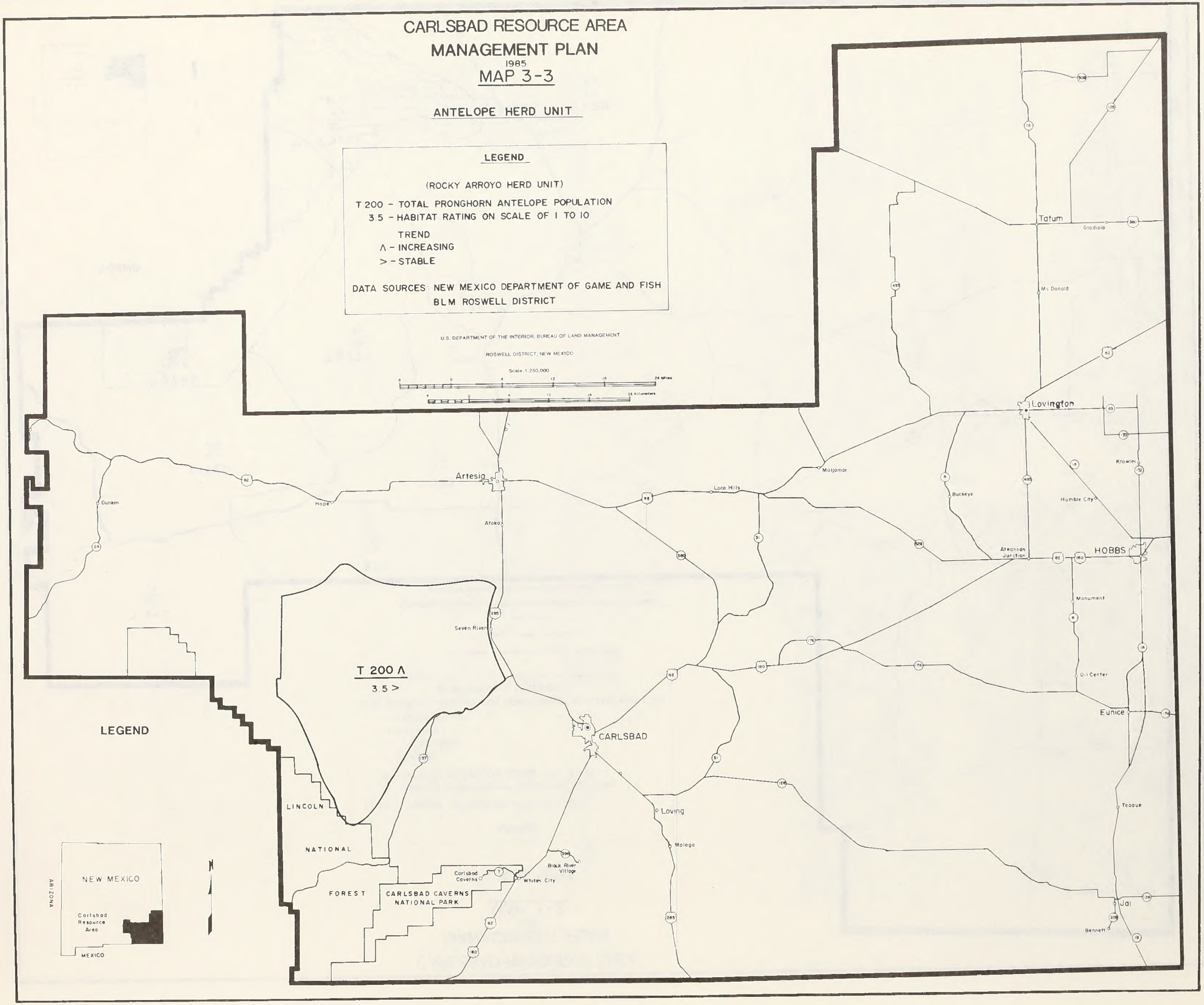
TREND
Λ - INCREASING
> - STABLE

DATA SOURCES: NEW MEXICO DEPARTMENT OF GAME AND FISH
BLM ROSWELL DISTRICT

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT

ROSWELL DISTRICT, NEW MEXICO

Scale 1:250,000



6
0
6
12
18
24 Miles
6
0
6
12
18
24 Kilometers
Tatum
Gladiola
McDonald
Lovington
Knowles
Humble City
HOBBS
Atesnsas Junction
Buckeye
Maljamar
Loco Hills
Artesia
Atoka
Hope
Dunken
Seven Rivers
Monument
Oil Center
Eunice
Teaque
Jal
Bennett
CARLSBAD
Loving
Malaga
Black River Village
Whites City
Carlsbad Caverns
CARLSBAD CAVERNS NATIONAL PARK
LINCOLN
NATIONAL
FOREST
T 200 Λ
3.5 >
LEGEND
NEW MEXICO
Carlsbad Resource Area
ARIZONA
MEXICO

Small Game

Major species of upland game birds include scaled quail, bobwhite quail, prairie chickens, and mourning dove. Recent inventories on public lands east of the Pecos show that bobwhite quail are numerous and approximately 40 prairie chickens were located. Bobwhite and prairie chickens are restricted to mesquite grassland and shinnery oak/dune areas.

Scaled quail and mourning dove are distributed throughout the CRA. Population numbers of all these game birds fluctuate, depending in part on precipitation and habitat quality. Mourning dove are less dependent upon these factors, since they are migratory.

Gambel quail reintroductions were attempted by the NMDG&F, but populations have not reached huntable numbers. Jackrabbits and cottontail rabbits are also common in the CRA, utilizing all SHSs.

Nongame

Many nongame species, including raptors, small mammals, birds, reptiles and amphibians, occur throughout the CRA.

Recent research information through the University of New Mexico has shown that raptor populations east of the Pecos are the highest reported breeding and nesting densities in the United States. The key raptor species involved is the Harris Hawk, although several additional raptors inhabit the area.

Waterfowl

Some waterfowl are yearlong residents within the CRA, but the majority are migratory. These birds use almost any available surface water, including stock tanks and oil reserve pits. Key migratory concentrations follow the Pecos River drainage.

THREATENED OR ENDANGERED SPECIES

Federal and State listed plant species in the Resource Area are shown in Appendix D-13. Federal and State Threatened or Endangered (T&E) animal species are listed in Appendix D-14. These species occupy a wide variety of existing and potential habitats throughout the Resource Area.

The Pecos River, the major drainage in the CRA, along with the Black, Delaware, Penasco Rivers, and Rio Feliz (smaller drainages feeding into the Pecos) provides some warm water game fishing. The quality and quantity of water is greatly influenced by high siltation rates, shallow depth, and frequent drawdowns as a result of irrigation, dams, and aqueduct networks.

The Pecos gambusia (Gambusia nobilis) is Federally listed as an endangered fish that historically occurred in springs and tributaries of the Pecos River drainage in New Mexico and Texas. However, only one population remains within the CRA at Blue Spring (Black River Drainage) which is located on private land.

The Bluntnose shiner (Notropis simus) is currently a Federal Notice of Review species with identified critical habitat along the Pecos River. However, BLM manages only 2 miles of riverbank within the identified critical habitat.

SPECIAL MANAGEMENT AREAS

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The BLM planning process provides for identification of potential Areas of Critical Environmental Concern (ACEC) so they may be included in the analysis of the alternatives. ACECs are "...areas within the public lands where special management attention is required...to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards" [FLPMA 103(q)].

ACECs may be nominated by members of the public, other agencies, or by BLM. BLM then applies the ACEC identification criteria to each of the nominated ACECs. Two criteria, relevance and importance, must be met for the nominated ACEC to be analyzed in the RMP (43 CFR 1610.7-2). Thirteen ACEC nominations were received for this planning effort and six were judged to meet the criteria (see Table 3-7). All or part of many nominated ACECs are considered for other special designations.

SPECIAL AREAS

Portions of the CRA possess significant values or land use conflicts which may require more intensive management than surrounding public lands. The following is a brief description of these areas. Appendix E has a complete description and location maps. The acreage displayed would represent the largest area that would be proposed for intensive management.

#1 Seven Rivers Hills

This area includes 540 acres of critical habitat for the Federally Listed Threatened, gypsum wild buckwheat. It also provides habitat for other unique and endemic vegetation existing on gypsum soils.

#2 Cave Resources

There are many caves on public land, primarily in the limestone and gypsum deposits in the southwest portion of the CRA. BLM currently focuses limited funds and workforce to manage the following 18 important caves.

(a) McKittrick Hill Caves Complex (4,920 acres) includes four gated recreational caves and one gated research cave (Dry Cave) noted for its important paleontological deposits. This complex is the most popular recreational caving area, receiving approximately 80 percent of the permitted caving use within the CRA.

(b) Lost Cave (20 acres) is a small cave with a hazardous entrance. This cave is currently gated with management and maintenance responsibilities shared through a cooperative management agreement with the Pecos Valley Grotto of the National Speleological Society.

(c) Fence Canyon Caves Complex (360 acres) has four gated caves. One is closed except for research and the other three are available for recreational use. One of the caves is large and especially popular for recreational caving.

(d) Little Manhole/Big Manhole Caves (100 acres) includes two small vertical caves with some extremely fragile formations. Both caves are gated and receive light recreational use.

(e) Yellowjacket/Lair Caves (260acres) includes two ungated, open caves. One cave has been subjected to extensive abuse and vandalism, while the other is quite large and used by bats during the warmer periods of the year.

(f) Chosa Draw Caves Complex (2,360 acres) includes one large, significant gypsum cave (Parks Ranch, the second longest recorded gypsum cave in North America) on public land and about 60 smaller gypsum caves in the Chosa Draw drainage, partially on public land and partially on adjacent private land. This entire complex plays a very important part in the regional hydrology, helping to transfer surface precipitation to the groundwater tables, underground streams, and area springs. These springs provide habitat for State listed fish species: Mexican tetra (Astyanax mexicana), silvery minnow (Hybognathus nuchalis), greenthroat darter (Etheostama lepidum), blue sucker (Cycleptus elongatus), and gray redhorse (Mexastoma congestum). They also provide habitat for three herpetofauna: barking frog (Hylactophryne augusti), river cooter (Pseudomys concinna), and plain bellied water snake (Nerodia esythrogaster). Parks Ranch Cave receives heavy recreational use. It can be hazardous due to flooding during heavy rainstorms.

TABLE 3-7

NOMINATED AND POTENTIAL AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Site Name	Approximate Size (Acres)[1]	Primary Resource Values[2]	Remarks
Potential ACECs			
1. Chosa Draw Caves Complex	2,360	Unique gypsum cave ecosystem; sensitive animal species; flooding hazards.	Portion proposed for Special Recreation Management Area, (SMRA).
2. Dark Canyon	3,950	Sensitive species; scenic; caves.	Portion proposed for SMRA
3. Lonesome Ridge	2,990	Sensitive plant and animal species; scenic; geological.	Proposed Outstanding Natural Area (ONA).
4. Blue Spring	160	Sensitive animal species.	
5. Yeso Hills	5,460	Sensitive plant species; watershed; geological.	Portion proposed for Research Natural Area (RNA).
6. Pecos River/Canyons Complex	5,190	Sensitive plant and animal species; scenic; cultural.	Portion proposed for RNA.
Nominated But Determined Not Qualified for ACEC Designation			
1. San Simon Swale	2,000	Soils	
2. Phantom Banks Heronries	26,800	Sensitive animal species	
3. Livingston Ridge	800	Sensitive plant species	
4. Los Medanos Raptor Area	89,360	Sensitive animal species	
5. Poco Site	51	Cultural	
6. Bear Grass Draw	3,040	Cultural	
7. Little McKittrick Draw	500	Sensitive animal species	Proposed for RNA

[1] This figure represents public land surface acreage, only for the maximum size of a nominated area.

[2] Additional resource values for potential ACECs are described under the Special Areas section of this chapter. More detailed resource information for the nominated areas is in the MSA document, available at the CRA office, Carlsbad, New Mexico.

(g) Mudgetts/Little Mudgetts Caves (50 acres) includes one small cave and one larger cave which shows evidence of historic guano mining and is heavily vandalized. Neither cave is gated.

(h) Honest Injun Cave (10 acres) This very small cave has been excavated for archaeological deposits and is closed except for research. The cave has no recreation potential.

#3 South Texas Hill

This 1,960-acre area was identified by the New Mexico Natural History Institute as an excellent example of essentially undisturbed Chihuahuan Desert ecosystem. Although inventories have not been completed for South Texas Hill Canyon, potential habitat exists for five State Endangered plant species.

Guadalupe mescal bean, Sophora gypsophila var. guadalupensis
Button cactus, Epithelantha mecromeris
Gray's sibara, Sibara grisea
Hershey's Cliff daisy, Chaetopappa hershey
Guadalupe milkweed, Polygala rimulicola

#4 Dark Canyon

This 4,750-acre area (including 800 acres private surface/Federal subsurface mineral estate) contains several sensitive natural features with potentially significant conflicts with oil and gas development. This area can be divided into two zones.

Zone 1 includes a segment of Serpentine Bends and Fawn Valley in lower Dark Canyon, characterized by steep, rugged hillsides and sheer limestone cliffs. This area has a high (Class A) scenic quality rating. Critical view points of Fawn Valley and a portion of Serpentine Bends are located along the Guadalupe Ridge jeep trail of the Carlsbad Caverns National Park. Two known caves (Mudgetts and Little Mudgetts) occur within this area. Two State proposed Endangered plant species occur in the area. They are the Guadalupe mescal bean and button cactus. In Zone 2, the terrain east of the Serpentine Bends ridgeline is typified by undulating limestone hills cut by several steep drainages. It has a medium (Class B) scenic quality rating. The area is adjacent to the designated wilderness of Carlsbad Caverns National Park, and mostly screened from view by Guadalupe Ridge. Little and Big Manhole caves are found within this zone and contain some extremely fragile formations. A portion of the Mudgetts Wilderness Study Area (WSA) is in this area.

#5 Lonesome Ridge

This 2,990-acre area contains a great diversity of high scenic, wildlife, plant, geologic, and other natural history values. The 3,392 acre Lonesome Ridge WSA includes this 2,990 acre area. Values of particular importance include:

Vegetation This area extends through four life zones, each with unique vegetation (the Chihuahuan Desert Scrub, Interior Chaparral, Madrean Evergreen Woodland, and Great Basin Conifer) woodlands. McKittrick pennyroyal (Hedeoma apiculatum) is a Federal Threatened plant that occurs in moist canyon walls within Big Canyon. State Endangered species, Guadalupe mescal bean (Sophora gypsophila var. guadalupensis) and gray sibara (Sibara grisea) also occur in the canyons.

Wildlife Many kinds of game animals occur in the area, including javelina, mountain lion, barbary sheep, mule deer, pronghorn antelope, scaled blue quail, mourning dove, and rabbits. Habitat exists for the potential occurrence of several Federal and State Endangered species including peregrine falcon, rock rattlesnake, Trans-Pecos rat snake, barking frog, and varied bunting. Cave swallows nest in at least one cave within the canyon.

Geology Lonesome Ridge is part of the Capitan Reef, the world's foremost example of a Permian Age fossil reef. This reef is studied internationally by scientists and researchers. Geologic evidence strongly suggests the probability of more undiscovered caves.

Caves One of the known caves in this area is located on the administrative boundary with the Lincoln National Forest and is managed by cooperative agreement between BLM and FS.

Recreation - The area provides high quality semiprimitive nonmotorized recreational opportunities for dispersed camping, hiking, horseback riding, caving, wildlife viewing, and sightseeing. One unmaintained trail (Golden Staircase Trail) passes through the area and extends into the Lincoln National Forest (Forest Trail 56). Legal and physical vehicular access to the area has been established, however, the Golden Staircase Trailhead and access into Big Canyon is located on private land without legal public access. The area is adjacent to the Lincoln National Forest Guadalupe Escarpment WSA.

Scenery The area possesses spectacular scenery including sheer limestone cliffs, sharp, serrated ridges and deep canyons. The Guadalupe Escarpment abruptly rises nearly 2,000 feet above the valley floor. The inventory and evaluation of the area's visual values assigns it a high (Class A) scenic quality rating, and a high level of visual sensitivity.

#6 Springs Riparian Habitat

A total of six springs have been identified for special attention. They include:

(1) Bogle Flat Springs (5 acres)
(2) Preservation Spring (53 acres)
(3) Cottonwood Spring (108 acres)
(4) Owl Spring (25 acres)
(5) Ben Slaughter Draw (375 acres)
(6) Blue Spring (160 acres public and 440 acres private surface/Federal minerals)

The acreage shown above includes 200 acres of reparian habitat and the additional acres required to protect T&E species habitat and to provide buffers around the springs. These springs are perennial oases in the desert and contain endemic fish populations including the Federally listed Threatened Pecos Gambusia (Gambusia nobilis) in Blue Springs, and riparian habitat conducive to many other wildlife species. The proposed State Endangered plant, Astragalus gypsodes, and Federally Threatened plant, Eriogonum gypsophilum, occur within some of the areas. Current livestock grazing is often concentrated near the springs water and where this occurs, the quality of the water and surrounding vegetation is reduced.

#7 Yeso Hills

This 5,460-acre area contains low rolling hills of the Castile formation (gypsum and dark bituminous limestone interlaminated with white gypsum). The fragile gypsum soils are highly susceptible to wind and water erosion. The nearly pure gypsum soils support a variety of unique gypsophils within the Chihuahuan Desert ecosystem. Although the area has not yet been inventoried, very suitable habitat exists for Gypsum Wild Buckwheat which is a Federal Threatened species. Also, the proposed State Endangered gypsum milkvetch (Astragalus gypsodes) occurs throughout the area. Suitable habitat also exists for the barking frog which is listed Endangered by the State of New Mexico.

#8 Bluntnose Shiner Habitat

A 200-acre tract of public land along the Pecos River is associated riparian habitat for the bluntnose shiner, a proposed Federal Endangered species.

#9 Little McKittrick Draw

This 500-acre area is suitable habitat for the New Mexico ramshorn snail which carries State Endangered status and is a candidate species for Federal Threatened/Endangered status. Little McKittrick Draw is one of only two locations where the New Mexico ramshorn snail is known to occur. It is found in seasonal rock pools, within ephemeral draws.

#10 Laguna Plata

The Laguna Plata Archaeological District has been declared eligible for to the National Register of Historic Places. The District contains 3,360-acres of public land. The area is still essentially undisturbed despite some salt mining on the playa bottom and National Potash Company's use of Laguna Plata for emergency brine water disposal. The area eligible for the National Register is a complex of many sites with surface and subsurface cultural materials demonstrating that the area was used repeatedly over a lengthy period of time (East Eddy MFP AR 3.1).

#11 Maroon Cliffs

This 12,423-acre area has been determined eligible for the National Register as an Archaeological District. The archaeological sites recorded thus far are open campsites dating from the Archaic (5000 BC) to the Jornada Mogollon (AD900-1450). Pithouse structures have been reported to occur at Maroon Cliffs; however, excavation is required to confirm this report. The Maroon Cliffs area is topographically diverse, providing a variety of exploitable environments for prehistoric peoples. Thus, the Maroon Cliffs Archaeological District is an ideal laboratory for the study of man-environment adaptations in southeastern New Mexico.

#12 Potash Bull Wheel

The Potash Bull Wheel is a historic structure consisting of two wooden wheels, connected by a wooden shaft. This structure was utilized in the drilling of a 1925 well which failed to locate oil but did locate miniable quantities of potash. This site has also been determined eligible for the National Register of Historic Places.

#13 Los Medanos Raptor Area

This 89,360-acre area includes the area around the WIPP area within the Southern Plains mixed brush and grassland environment.

The area provides habitat for a very high density of breeding raptors, perhaps the highest density in North America (Bednarz, personal communication, 1985). There are also large numbers of nonbreeding raptors using the area. A very unique raptor, the Harris' Hawk, inhabits the area as the northern most extension of its range.

Following is a list of raptors found in the Los Medanos Raptor Area.

Breeding Species

redtail hawk
Swainson's hawk (Federal candidate species)
Harris' hawk
great horned owl
burrowing owl

Wintering Species

northern harrier
golden eagle
Coopers' hawk
American kestrel
ferruginous hawk (Federal candidate species)
goshawk

The State Endangered plant, sand dune unicorn (Proboscidea sabulosa) occurs within this area.

#14 San Simon Swale Pronghorn Habitat

This area includes approximately 25,000 acres of public land scattered in among predominantly private and State lands. The area contains suitable habitat for pronghorn populations.

The State Endangered plant, sand dune unicorn, occurs within the area.

#15 Phantom Banks Heronries Area

This 26,800-acre area contains at present seven great blue heronries. Great blue Herons (Ardea herodies) are sensitive to human activities, particularly during the breeding season. These are the southern most herodies in New Mexico.

#16 Poco Site

The Poco Site (51 acres) is a prehistoric multicomponent site that has retained much of its stratigraphic integrity and, until recently, has not suffered any significant disturbance from oil and gas development activities. Undisturbed stratified sites are rare in southeastern New Mexico and the information they contain is critical to understanding the regional prehistory. In addition, the Poco site may contain pithouse structures, a very rare occurrence. The site was declared eligible for nomination to the National Register of Historic Places by the State Historic Preservations Officer (SHPO). (Kyte, Michael, 1984)

#17 Bear Grass Draw

This 3,040-acre area includes several archaeological sites which may contain intact stratigraphic deposits. One site in particular (LA 17041) is a very large multicomponent site which contains considerable subsurface cultural material. LA 17041 has been determined eligible for the National Register of Historic Places by the SHPO.

#18 Pecos River/Canyons Complex (5,190 acres)

Two large distinctive limestone and sandstone canyons (Pierce and Cedar) converging with one of the remaining free-flowing sections of the Pecos River provide a unique landscape in southeastern New Mexico. The close association of the canyons and river display a combination of values including; unique riparian habitat not elsewhere evident in the desert grassland of southeastern New Mexico; the convergence of many diverse soil types including, though not limited to, deep sands, gypsum soils, gravelly loam, loamy bottomlands, and active sand dunes; distinctive and virtually unspoiled scenic values, particularly in the two canyons; large and culturally complex archaeological sites suggesting prehistoric occupation over a long period of time (Archaic, Jornada, and Mogollon periods--8,000 years ago to 1350 AD); and prime wildlife habitat for several Endangered animal species such as olivaceous cormorant, Mississippi kite, bald eagle, peregrine falcon, least tern, Bell's vireo, varied bunting, sagebrush lizard, plain-bellied water snake, western ribbon snake, Trans-Pecos rat snake, rock rattlesnake, barking frog, blue sucker, gray redhorse, Mexican tetra, silvery minnow, greenthroat darter, Pecos gambusia, Pecos spring snail, Popes mussel, and wide pea clam. All corresponding scientific names are listed in Appendix D-14. The canyons could provide vegetative habitats with high potential for supporting State Endangered plant species.

#19 Pope's Well

This 40-acre site contains artesian well drill sites and stone remains of the army camp used by Captain John Pope in the mid-1850s. The camp and wells were constructed while trying to establish reliable water sources for the proposed southern route of the transcontinental railroad.

#20 Guadalupe Escarpment

This 49,470-acre area includes two zones of high visual sensitivity which can be seen from the Carlsbad Caverns National Park, parts of the Lincoln National Forest and BLM land, and from along U.S. Highway 62/180. The first zone includes 8,880 acres of highly sensitive, minimally disturbed landscape adjacent to the Guadalupe Escarpment. The second zone is typically further from the escarpment, has more existing visual intrusions, and has more scattered land ownership patterns.

#21 Alkali Lake Off-Road Vehicle (ORV) Area

This 900-acre tract of public land lies adjacent to the City of Carlsbad Motocross Track. This area is currently being developed for oil and gas but also absorbs a large amount of casual motorcycle use attracted to the area by the motorcross track. There are no known sensitive resources in this area.

#22 Hackberry Lake ORV Area

This 55,800-acre area is managed for a variety of multiple uses including motorcycle use. A local motorcycle club has been authorized several Special Recreation Permits for enduro events. Motorcycle trails have been established to provide yearly variations in routes. The area is popular for both competitive and casual motorcycle use due to the diversity of terrain and easy accessibility from State Route 31. The 55,800 acres covers the motorcycle trails and an adjacent sand dune area popular for general ORV use.

#23 Pecos River Corridor

This 6,000-acre area covers a 1/2-mile wide corridor of public lands along the Pecos River (1/4-mile on each side of the river) which are important for riparian habitat, soil stabilization, and recreation activities, especially fishing.

This area also includes public land adjacent to Red Bluff Reservoir, which is popular for leisure boating, fishing, picnicking, and camping. The East Eddy-Lea Management Framwork Plan (MFP) provides for 120 acres or more if expansion beyond the 120 acres is necessary, for the development of an intensive recreation facility at the reservoir. Public lands provide needed public access to this important reservoir. A boat ramp has been installed through cooperation between the BLM, NMDG&F, Eddy County, and the Carlsbad Sportsman's Club.

FIRE MANAGEMENT

An average of 12 fires per year were suppressed from 1974 through 1985 in the planning area. The average size fire was approximately 56 acres. The largest fire during this period was 700 acres in 1974. Most fires are caused by lightning and occur throughout the CRA.

RECREATION

The CRA provides a variety of recreation opportunities. Most of the recreation use is independent of recreational development. These dispersed recreation use opportunities include hunting, camping, picnicking, fishing, horseback riding, hiking, climbing, caving, sightseeing, and recreational ORV use. These activities occur throughout the CRA with some activities concentrated in several of the proposed special management areas described in Appendix E.

The CRA receives extensive deer hunting use, particularly west of the Pecos River, and widespread quail and dove hunting. The greatest use is within NMDG&F game hunting unit 30, where large numbers of licensed deer hunters visit each year. This has resulted in conflicts between hunters and ranchers and other landowners. The "Operation Respect" hunter access and patrol program was developed to minimize user con- flicts and assist public land users.

Camping, picnicking, and sightseeing occur throughout the CRA, usually in conjunction with other recreational pursuits such as hunting, fishing along the Pecos River and at Red Bluff Reservoir, ORV use, and caving (particularly at the McKittrick Hill caves area).

Public lands along the Pecos River serve an important role in providing warm water fishing opportunities. These lands are scattered, with access uncertain in some locations. Red Bluff Reservoir is probably the most important area for watersports, especially boating and fishing. Eddy County, in cooperation with BLM, Carlsbad Sportsman's Club, and NMDG&F, installed a new boat ramp in 1984.

Three established, but unmaintained trails cross public lands. A trailhead and approximately one mile of the Ussery Trail originates on public land, crosses the southwestern corner of Carlsbad Caverns National Park, then terminates at a primitive road in the Lincoln National Forest. Located on a 320-acre public land parcel on the Guadalupe Rim, approximately one mile of the Devil's Den Trail extends west across public land from Lincoln National Forest Trail No. 202 prior to entering private land. The Golden Staircase Trail, located on public lands for about two miles on Lonesome Ridge, joins Lincoln National Forest Trail No. 56. This trailhead is located on private land at the mouth of Big Canyon, without legal vehicular access at the present.

Recreation Opportunity Inventory

An inventory has been conducted using the

Recreation Opportunity Spectrum (ROS) classification system to identify recreation opportunities available in the CRA. This system has six classified recreation opportunity classes (see Appendix H for a description of the ROS and definitions of these classes). Table 3-8 illustrates the public land acreage for each ROS class which are depicted on Map 3-4.

TABLE 3-8
Recreation Opportunity Spectrum Classification

Class	Acreage/Percent of Public Lands
Primitive	0 / 0
Semiprimitive Nonmotorized (SPNM)	55,100/2
Seimprimitive Motorized (SPM)	1,038,320/48
Roaded Natural (RN)	1,071,520/49
Rural (R)	5,780/ -
Urban (U)	280/ -

Source: BLM Carlsbad CRA Office files, 1985.

OFF ROAD VEHICLES

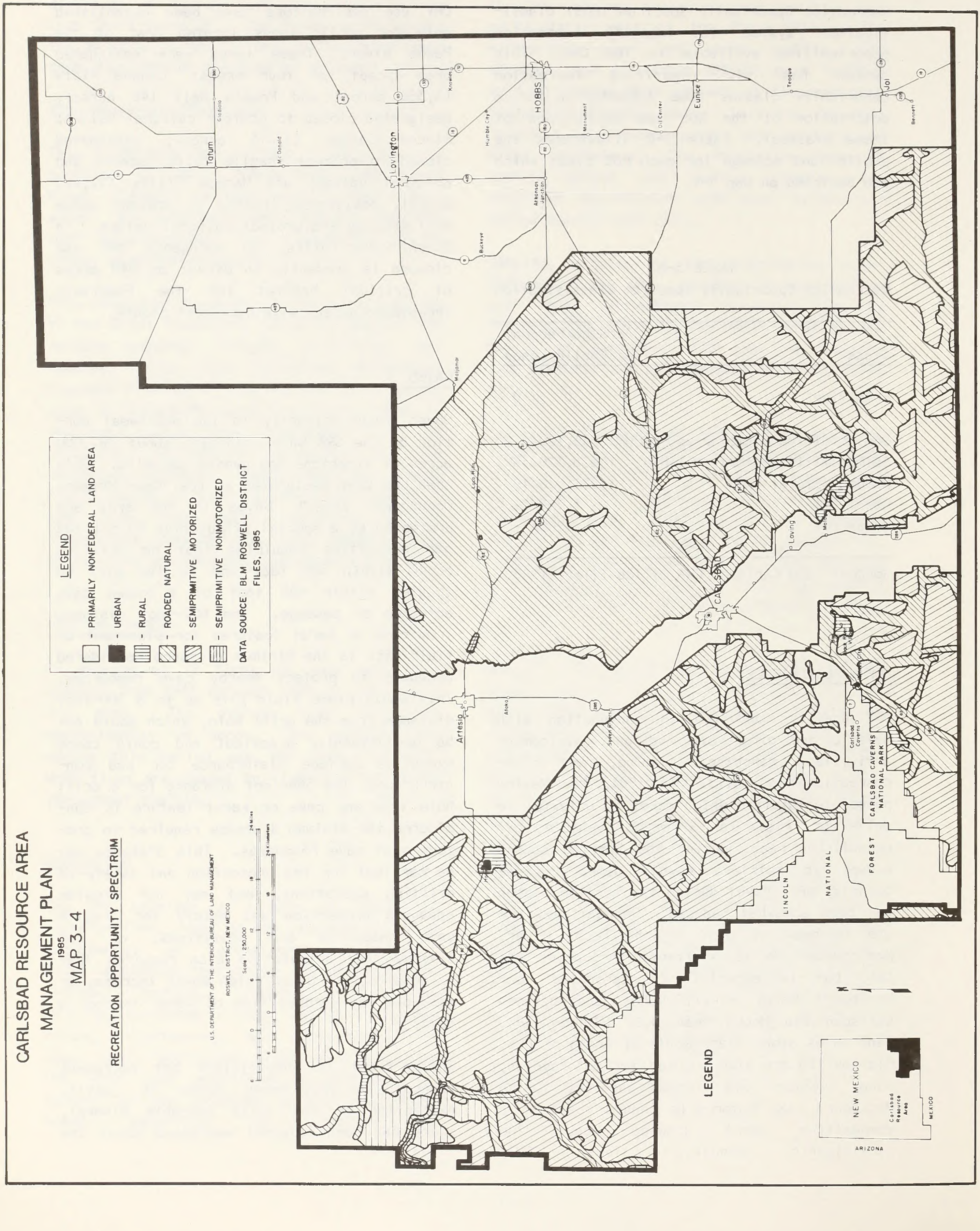
ORV use is conducted in conjunction with seismic and other oil and gas development activities, ranching, hunting, amd other recreational pursuits. In 1983, New Mexico passed legislation which makes it unlawful to drive or ride in a motor vehicle off established roads during the hunting season except to retrieve downed game. Consequently, ORV travel during the hunting season has been somewhat reduced. Recreational ORV use is heaviest east of the Pecos River. Motorcycle use is scattered throughout the CRA, but is especially concentrated near Hackberry Lake, Alkali Lake, and between Carlsbad and Hobbs near U.S. Highway 180. Sand dunes along State Route 31 north of U.S. Highway 180 are also popular for motorcycles, dune buggies and three wheelers. The Hackberry Lake Motorcycle Enduro has been a competitive event drawing about 200 participants annually since 1982.

ORV use designations have been established only for public lands located east of the Pecos River. These lands were designated open except for four areas: Laguna Plata (3,360 acres) and Pope's Well (40 acres), designated closed to protect cultural values; Pierce Canyon (1,215 acres), designated closed to protect fragile soils, scenic and cultural values; and Maroon Cliffs (12,423 acres), designated limited to prevent undue soil erosion and protect cultural values. In Seven River Hills, an emergency ORV use closure is presently in effect on 540 acres of critical habitat for the Federally Threatened gypsum wild buckwheat plants.

CAVES

Caves occur primarily in the southwest portion of the CRA which contains about 387,000 acres of limestone and gypsum deposits. This area has been designated as the "Cave Primary Occurrence Zone." Caves in the area are protected by a special stipulation to oil and gas activities requiring that no drilling occur within 300 feet and no two pits be located within 600 feet of a known cave entrance or passage. The 600-foot distance from cave or karst features for placement of fluid pits is the minimum distance considered adequate to protect nearby cave resources. This would place fluid pits up to a 300-foot distance from the drill hole, which would not be operationally practical and could cause excessive surface disturbance for pad construction. The 300-foot distance for a drill hole from any cave or karst feature is considered the minimum distance required to protect most cave resources. This distance may be marginal for the protection and safety of drilling operations, and may not provide adequate protection and safety for fragile cave resources and ecosystems, or for cavers. The stipulation also requires that no construction occur which would increase or decrease the natural flow of water through a cave.

While there is insufficient bat excrement (guano) in any known caves to justify extraction of the solid leasable mineral, there has been interest expressed about the


CARLSBAD RESOURCE AREA
MANAGEMENT PLAN
1985
MAP 3-4
RECREATION OPPORTUNITY SPECTRUM
U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT
ROSWELL DISTRICT, NEW MEXICO
Scale 1:250,000
6 0 6 12 18 24 Miles
6 0 6 12 18 24 Kilometers
LEGEND
PRIMARILY NONFEDERAL LAND AREA
URBAN
RURAL
ROADED NATURAL
SEMIPRIMITIVE MOTORIZED
SEMIPRIMITIVE NONMOTORIZED
DATA SOURCE: BLM ROSWELL DISTRICT FILES, 1985
Tatum
Gladiola
McDonald
Lovington
Knowles
Humble City
HOBBS
Monument
Oil Center
Eunice
Teague
Jal
Bennett
Arkansas Junction
Buckeye
Maljamar
Loco Hills
Artesia
Atoka
Seven Rivers
CARLSBAD
Loving
Malaga
Whites City
Carlsbad Caverns
CARLSBAD CAVERNS NATIONAL PARK
LINCOLN NATIONAL FOREST
LEGEND
NEW MEXICO
Carlsbad Resource Area
ARIZONA
MEXICO

possibility of such a venture. Historically, guano mining did occur in Mudgetts Cave.

The BLM focuses limited funds and work force to manage 18 of the most important caves.

Thirteen of these caves are presently gated and use is carefully regulated. Three are closed except for research, and the remainder are managed for recreation, education, scientific use, and protection of natural values and cave ecosystems.

There are over 25 other known caves, and the high probability for discovery of many others. The intensively managed cave areas are described in further detail under the Special Areas section of this chapter.

Caves in the CRA are used for recreation, education, and scientific research. About 200 recreational cave permits are issued each year. Approximately 80 percent of these permits are for the three main caves of the McKittrick Hill Caves Complex (Endless, Sand, and McKittrick Caves). About 14 percent of the permits are issued for the Fence Canyon caving area (Wind, Doc Brito, and Jurnigan #2 Caves). The remaining permits issued for recreational use are for Big Manhole, Little Manhole, and Lost caves.

While use records of recreational caving for the ungated caves is not available, it is estimated to be at least equal to the permitted use. Recreational caving use has been gradually increasing over the past several years. Requests are received annually for bonafide scientific cave research including extensive paleontological studies in Dry Cave, located in the McKittrick Hill caves complex. Other gated caves include Little Sand Cave, Jurnigan #1 Cave, and Honest Injun Cave.

Three to five educational caving tours are conducted annually by BLM personnel with help from local qualified volunteers. Tours are conducted upon request for various organizations and schools.

Caves of the CRA serve a very important role for the general public and caving community. Many of the caves are more easily accessible, generally easier to find, and require less technical caving skills than those in the neighboring National Forest and National Park. Driving time from Carlsbad is also significantly less. As a result, caves within the CRA are appealing to novices, larger groups, and cavers having limited amounts of time. Consequently, BLM caves, particularly the McKittrick Hill Caves, Wind Cave, and Parks Ranch Cave (ungated) receive heavy use and are extremely important in meeting the demand for caving.

VISUAL RESOURCES

Visual resource management (VRM) objectives have been determined for all public lands in the CRA. These objectives were derived from previous land use planning and recent visual resource inventories for lands west of the Pecos River. Four management objectives have been established based on scenic, quality, visual sensitivity, and distance from key observation points. These objectives (classes) describe the different degrees of modification allowed in the basic elements of the landscape. The approximate acreage for each class is: VRM Class I, 0 acres; VRM Class II, 28,980 acres; VRM Class III, 286,900 acres; and VRM Class IV, 1,855,120 acres. See Appendix I for a description of the four management classes and related objectives. Map 3-5 depicts the VRM classes derived from both previous planning and recent inventories.

Of particular visual significance within the CRA is the area adjacent to Carlsbad Caverns National Park, portions of the FS Guadalupe Ranger District, and along the southern portion of U.S. Highway 62/180. The high numbers of tourists traveling to Carlsbad Caverns National Park, and the primary viewing points along the travel routes make this a highly sensitive visual area.

CULTURAL RESOURCES

To date, 62,000 acres, or 3 percent of the public lands in the CRA have been inventoried for cultural resources. A total of 1,800 cultural resource sites have been recorded, and most of these recorded sites are prehistoric. The majority of historic sites in the CRA are located on private land and are 19th and early 20th century homesteads.

Ninety of the 1,800 known cultural resource sites have been declared eligible for the National Register of Historic Places by the SHPO and the Advisory Council for Historic Preservation. Almost 50 percent of these eligible sites are within the Laguna Plata and Maroon Cliffs National Register Archaeological districts. An additional 174 cultural sites were submitted to the SHPO for determination of National Register eligibility during development of the East Eddy-Lea MFP. The SHPO was unable to make a determination on these sites because of indadequate documentation. Nevertheless, these sites are protected by standard operating procedures. In addition, six of the twenty sites currently listed on the State Register of Cultural Properties for Lea and Eddy Counties are located on public lands in the CRA.

The earliest known cultural sites in the CRA date to 13,500 years ago or earlier. According to Camilli and Allen (1979), the cultural remains from Burnett Cave date from 28,000 to 11,800 years ago. However, these dates are questionable because the association of artifacts with extinct animals may have come about by mixing of the cave deposits by rodents. The earliest firmly dated Paleo-Indian sites belong to the Clovis and Folsom cultures (13,500 to 8,000 years ago). These people lived in family groups of about 25-50 persons and made their living by gathering and using wild plants as well as hunting. The Clovis people are best known for hunting mammoth, an extinct type of elephant. Because mammoth hunting techniques often involved trapping the animal in boggy ground, many Paleo-Indian sites are found near Pleistocene (Ice Age) lakes. Another common hunting technique employed later by Folsom hunters involved driving bison over cliff edges. Paleo-Indian sites are found near Mescalero Ridge, Clayton Basin and Maroon Cliffs as well as near Pleistocene Age lakes and water courses.

After the end of the last Ice Age, about 8000 years ago, the climate in the CRA became warmer and drier and many Ice Age animals such as the mammoth, camel, horse, and sloth disappeared from the American continent. Man remained and continued to adapt to changing local conditions. These Archaic cultures continued living in family groups as they gathered wild plants and hunted small to medium sized game animals. Archaic sites are found in the dune country near springs or seasonal ponds (playas) and in caves in the limestone hill country west of the Pecos River. The cultural remains found in dune sites usually consist of hearths, stone tools, stone tool manufacturing debris, and grinding stones. Ring middens, a site type unique to the limestone hill country in the CRA, first appear during the late Archaic (ca. 1000 years ago).

During the late Archaic period, other native groups in western and northern New Mexico began to grow domesticated plants (corn, beans, squash, cotton, etc.), to make pottery and live in settled village groups. At least one of these farming cultures from western New Mexico (the Mogollon people) were known to the inhabitants of southeastern New Mexico. As a result of this contact, native peoples in the CRA began to make pottery and, on occasion, build structures called pithouses. However, because the local environment is poorly suited to farming by indigenous methods, hunting and gathering continued to be the dominant life-style among these people. For this reason, Jornada Mogollon sites are usually found in the same kinds of environments as Archaic age sites.

About 600 years ago the local peoples lost contact with the Mogollon cultures in western New Mexico and began to concentrate once again on bison hunting and gathering; a life-style more typical of historic plains Indians such as the Comanche and Kiowa tribes.

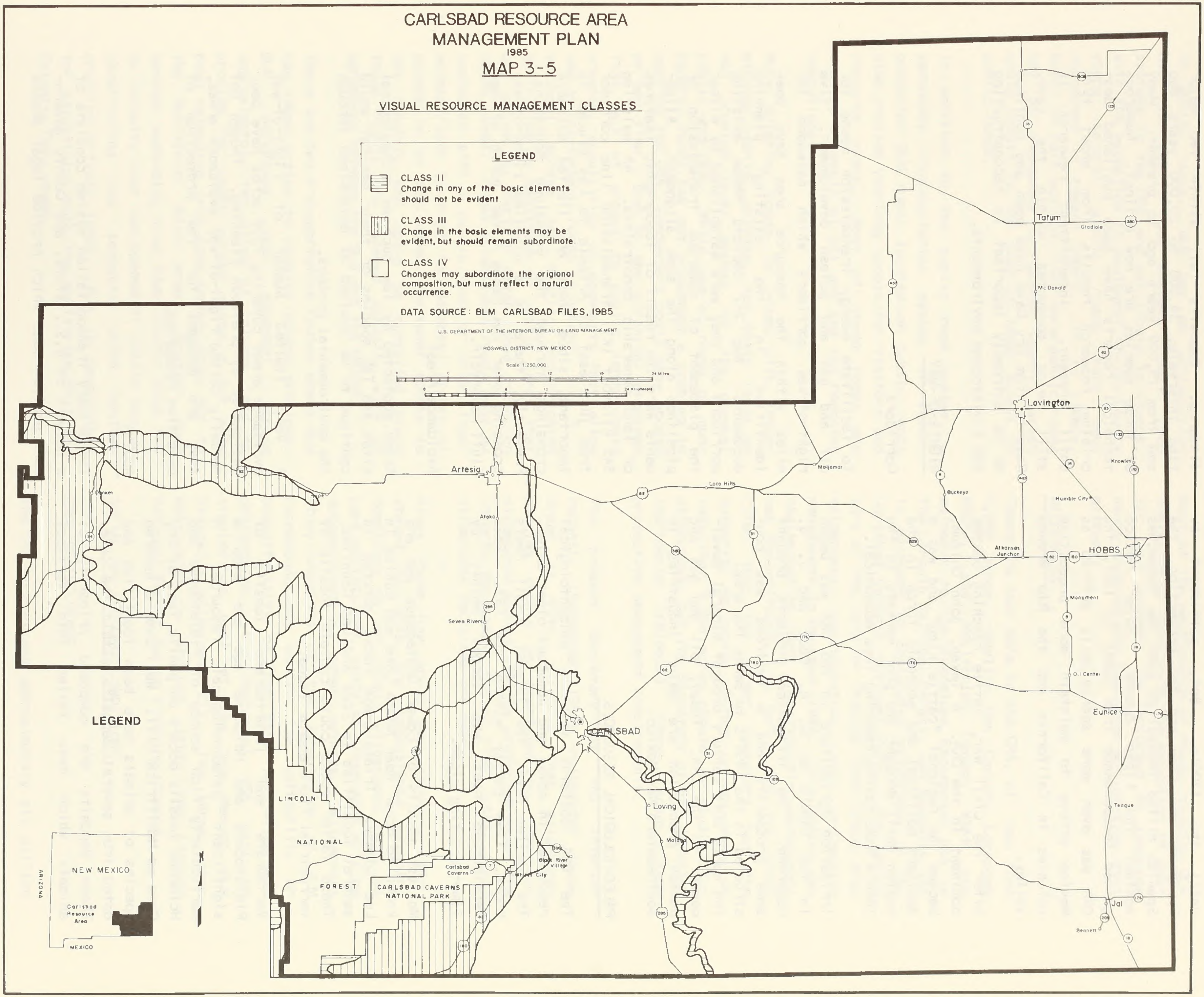
The Spanish first entered this area in the early 16th century and gained political control of the area shortly thereafter. However, the Spanish did not settle in the CRA

CARLSBAD RESOURCE AREA MANAGEMENT PLAN

1985

MAP 3-5

VISUAL RESOURCE MANAGEMENT CLASSES



LEGEND

▤ CLASS II
Change in any of the basic elements should not be evident.

▥ CLASS III
Change in the basic elements may be evident, but should remain subordinate.

☐ CLASS IV
Changes may subordinate the origional composition, but must reflect a natural occurrence.

DATA SOURCE: BLM CARLSBAD FILES, 1985

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT

ROSWELL DISTRICT, NEW MEXICO

Scale 1:250,000

Tatum
Gladiola
McDonald
Lovington
Knowles
Humble City
Buckeye
Maljamar
Loco Hills
Artesia
Hope
Dunken
Atoka
Seven Rivers
Atkansas Junction
HOBBS
Monument
Oil Center
Eunice
CARLSBAD
Loving
Malaga
Teaque
Jal
Bennett
Black River Village
White City
Carlsbad Caverns
CARLSBAD CAVERNS NATIONAL PARK
LINCOLN
NATIONAL
FOREST
LEGEND
NEW MEXICO
ARIZONA
Carlsbad Resource Area
MEXICO
24 Miles
24 Kilometers

until the 1700's. But, settlement by Europeans was slow and for protection, the Spanish allied themselves with the Comanches against the Lipan Apache. After Mexico gained independence from Spain in 1821, the CRA was even more sporadically settled as Mexico strove to maintain more productive colonies in California and the Rio Grande valley.

After the Civil War, cattle ranching became dominant in the CRA. A Texan, John Chisum, became the regional "cattle king" and was a dominant political and economic force in the region until drought and poor markets in the 1800's made cattle ranching less economical.

Irrigation agriculture in the CRA was begun in the 1890's by C. B. Eddy and J. J. Hagerman. The irrigation projects brought some prosperity and a railroad was constructed in the 1890's to serve the area.
The early 20th century brought mineral development to the CRA. Today, oil and gas and potash production are major industries in southeastern New Mexico.

PALEONTOLOGICAL RESOURCES

The CRA contains valuable paleontological resources in caves and numerous other sites. The Capitan Reef, the largest fossil reefs known, lies partly within the CRA. This Permian-age reef was formed mainly by lime-secreting algae.

Mollusk fossils of Lower Cretaceous age are known to occur near North Lake and Eunice in Lea County. Triassic-age rocks outcrop in several localities in Eddy and Lea Counties. These latter rocks could contain fossils of terrestrial flora and/or fauna.

Vertebrate and invertebrate fossils of Pleistocene and Holocene age are also a significant paleontological resource. A particularly rich source of Pleistocene and Holocene fossils occurs on public land at Dry Cave on McKittrick Hill. Well over a hundred species of animals have been identified and dated from several deposits within the cave. These deposits are composed primarily of animals which have fallen into vertical fissures. Deposits fall within two major time intervals; 34,000 to 25,000 years ago and from 15,000 years ago to present. Many of these species are now extinct. Numerous technical reports have been published describing research results from about 1970 until present. Intermittent research is still being conducted within the cave. Results from Dry Cave have been and continue to be extremely important in reconstructing the Pleistocene environments.

RIGHTS-OF-WAY

Corridors

To facilitate energy transmission needs for oil and gas and potash development, five right-of-way corridors which extended 185 miles within the Resource area have been identified in the existing planning documents. Map 2-2 depicts these existing corridors and they were established by either the placement of numerous transmission or pipelines along the same alignment. Alignments were the result of topographic features or land ownership constraints. An existing 345 kilovolt (KV) transmission line corridor from just east of Artesia to Las Cruces is important, since there are limited suitable crossings through the Guadalupe Mountains. Presently, there is a pipeline right-of-way crossing over the Pecos River north of Red Bluff Reservoir.

Avoidance Areas

Areas protected by law such as archeological sites and T&E species or their habitat would continue to be avoided as determined through the environmental process.

A very limited number of right-of-way avoidance areas covering 7398 acres have been designated by previous planning. Though not formally called right-of-way avoidance areas, they are managed for the protection of sensitive resources.

ACCESS

The primary transportation system consists of a network of U.S., State, and County government public roads which provide legal access to public lands. BLM has no jurisdiction over the public road system. Public road systems in the CRA are not likely to change, with the exception of southwest Chaves County where several public roads have been abandoned in recent years. It is likely, based on past actions, that more public roads may be abandoned in Chaves County, which could result in the loss of legal access to public lands.

In addition to the public road system, a secondary transportation system of interconnected BLM roads located on public lands also provide yearlong access for visitors and resource users. Most of these roads are usually a result of oil and gas and ranching operations.

Many existing roads in areas with intermingled public, private, and State lands do not provide legal access for the general public and BLM. While use of roads on non-Federal lands has not presented a problem in most of the CRA, landowners could deny access at any time. Due to the potential problems that lack of access to public lands could present, acquisition of easements that allow use of non-Federal roads is needed.
Seasonal access for hunting and fishing activities is available on public lands that are served by certain established roads on State lands. These established roads must be connected with a public road or other legal access route in order for seasonal rights of access to be available. Seasonal access is not longterm and could be curtailed since these rights are renewed annually with an agreement between the SLO and the NMDG&F.

There are two transportation routes where BLM has taken action to resolve access problems. BLM purchased one easement across approximately two miles of private land to provide for legal access along a 9.8 mile road extending from Eddy County Road 406 to the McKittrick Hill area. Another road network extending from Eddy County Road 418 to Calamity Cove was opened to public use by constructing new segments which avoided crossing private lands. BLM is responsible for maintaining both the McKittrick Hill and Calamity Cove roads.

Most of the maintenance of roads crossing BLM administered land, with the exception of public road systems, is performed by resource users such as oil companies and grazing permittees.

WILDERNESS

There are four WSAs in the CRA, all less than 5,000 acres. Devil's Den Canyon, Lonesome Ridge, and McKittrick Canyon WSAs are adjacent to the Guadalupe Escarpment WSA in the Lincoln National Forest, and Mudgetts WSA is adjacent to designated wilderness in the Carlsbad Caverns National Park. The Secretary of the Interior dropped these areas from wilderness consideration and protective management in December 1982. This action was challenged in court and protective management was reinstituted. In April 1985 the court ruled that the former Secretary had the authority to decide whether or not areas of less than 5,000 acres should be studied for wilderness, but the Secretary of the Interior improperly released these areas from protective management requirements.

The present Secretary of the Interior recently (September 1985) reinstated these areas as WSAs, directed that wilderness studies should be completed by 1991 and wilderness values will be protected under the Interim Management Policy (IMP) until final wilderness decisions are made.

Since these four areas were recently reinstated as WSAs and established planning deadlines do not permit wilderness study as part of this RMP, study of these WSAs will be accomplished by other methods. Wilderness study consists of the formulation of BLM recommendations as to the suitability or nonsuitability of the WSAs for wilderness designation. The Mudgetts' WSA will be studied as part of the New Mexico BLM Statewide Wilderness EIS. The three other WSAs will be studied within the Lincoln National Forest during planning process.

SOCIAL AND ECONOMIC CONDITIONS

ZONE OF INFLUENCE

The CRA encompasses approximately six million surface acres of private, state, and federal lands. The area of primary influence includes Eddy, Lea, and the southwest portion of Chaves Counties. Because there are no major communities and only a small, very scattered population in southwest Chaves County (see Table 3-9), the economic and social analysis contained in this chapter will be concentrated in Eddy and Lea Counties. However, for those issues which have significant impacts associated with them, such as the rangeland resource issue, the analysis will be areawide.

In 1980, the population in the CRA was estimated to be 103,848 (see Table 3-9), an average population of 9.6 persons per square mile. The majority of the inhabitants are concentrated in the major trade centers of Carlsbad, Artesia, and Hobbs.

The population in the CRA has both increased and decreased over time. Table 3-9 shows that from 1950 until 1973 the population decreased. Then 1974 to 80 the population increased.

TABLE 3-9
POPULATION-NEW MEXICO COUNTIES

Year	County Eddy	 Lea	Area Total[1/]
1950	40,600	30,700	71,300
1955	47,200	48,500	95,700
1960	50,800	53,400	104,200
1965	48,000	52,200	100,200
1970	41,100	49,600	90,700
1973	40,900	49,000	89,900
1974	41,100	49,600	90,700
1975	42,600	51,600	94,200
1976	44,800	54,000	98,800
1977	45,600	53,100	98,700
1978	46,600	54,300	100,900
1979	47,300	55,700	103,000
1980	47,855	55,993	103,848

Source: New Mexico Statistical Abstract 1984.

[1/] Does not include small part of Chaves County.

HISTORY

The first Spanish expeditions into the southwestern United States occurred from 1530 to 1540. These initial European explorations followed the Rio Grande valley and had no impact in the CRA. It was not until the second exploration period (1580 - 1600) with the Rodriguez-Chamuscado, Antonio de Espejo, and the Gaspar Castono de Sosa expeditions, that explorations of the Pecos River Valley were undertaken and nominal European political control of the area was established. Despite Spanish claims, the CRA was not settled in any permanent sense until after the treaty of Guadalupe-Hidalgo in 1848. Prior to that, the area was dominated by the Comanche and Apache tribes with occasional use of the area by the Ciboleros (Buffalo Hunters) in the early 19th century. Later (1786-1860), the area was increasingly the focus of Comanchero traders. The earliest town settlements in southeastern New Mexico were established by Mexican-Americans at Missouri Plaza, La Placita (Lincoln), Tularosa, Puerto de Luna and San Patricio (1855-1873).

After the Civil War, cattle ranching became the predominant economic force in the region. The first cattle trails were blazed by C. Goodnight and O. Loving in 1866. They were succeeded by J. Chisum in 1868 who became the "Cattle King" of the region. Overgrazing, drought, and declining cattle prices led to the effective demise of the cattle industry in the late 1880's.

At this time, C. Eddy formed the Pecos Valley Land & Ditch Company in 1882, stimulating an era of land speculation along the Pecos River which culminated in the founding of Eddy (Carlsbad) and construction of a railroad to service the region. Adverse national economic conditions coupled with the poor design of the irrigation facilities led to the demise of the Pecos Valley Land & Ditch Company in 1908. The government subsequently acquired the irrigation facilities and rebuilt McMillan Dam.

Mineral exploration in the early 20th century led to the discovery of oil near Artesia in

1909. Potash was subsequently discovered in the area in 1925. At present, these two industries dominate the economic life of the CRA with secondary support from ranching and tourism.

QUALITY OF LIFE

Education is an important social factor. The median school years completed by persons 25 years of age and over is 12.3 years, while the State average is 12.6 years. The average daily attendance in public schools fell during the 1979-80 and the 1980-81 school years. However, increases of about 3.6 percent occurred during the 1981-82 and 1982-83 school years. County and city officials feel that the school systems have adequate capacity to handle additional increases.

The number of persons receiving public assistance is another key indicator of the social well-being of the area. Figures indicate that 9 percent of the population receive food stamps and 3 percent receive financial assistance. This compares to the entire State where 13 percent of the population receive food stamps and 4 percent receive financial assistance.

SOCIAL SETTING

Attitudes, values, and beliefs were compiled using the Harbridge House Report (Harbridge House Inc. 1979), the East Roswell Grazing EIS (BLM 1979), and the public input received during the issue indentification process in 1983.

Attitudes expressed by the ranchers have remained fairly constant. They feel that ranching represents the basis of the human economy and should have priority use of the public lands. They also express traditional values of an independent life-style, close-knit families and communities, and a concern for allocation of resources. Members of the ranching community are highly regarded both socially and politically. They feel a financial interest in all the lands requiring protection, regardless of land ownership patterns. Any proposal for increased use of the public land is, therefore, not favored.

Mining/oil and gas interests are intensely concerned about planning decisions affecting permitted land uses. They seek to keep open access to the public lands for exploration and development. They oppose expansion of areas which are withdrawn from entry but do support proposals that reduce restrictions on exploration and development. They also feel that exploration for and development of the minerals and energy resources lead to economic progress and improved living standards and quality of life.

Hunters want wildlife conservation on public lands and improved access to hunting areas. This group views hunting as a recreational release from day-to-day pressures and expects that the management of the public land should incorporate their values on a priority basis. They have historically been in favor of any proposal which provides additional access to public lands.

STRUCTURE OF THE ECONOMY

An input-output approach was used to describe the structure of the CRA's economy. This approach estimates the interrelationships between individual industry sectors in the economy and the impacts on the total economy of an expansion or contraction of any particular industry, livestock sales, or market variations in the livestock industry. The estimates of income and employment derived from the input-output approach should be considered as an approximation.

Economic Base

The economy of the CRA is primarily dependent upon the natural resource base. This base generates approximately 548.8 million dollars. The oil and gas industry generates \$270.6 million, mining \$166.7 million, and livestock industry \$83.3 million (see Table 3-10). These industries account for approximately 42.8 percent of the total dollar output.

Income

The estimated personal income of hired labor is approximately 338.5 million dollars of which 3.2 million dollars can be attributed to the livestock industry (Table 3-11). The oil and gas accounts for approximately 89.6 million dollars and mining accounts for 62.8 million dollars of income.

Assessed Valuation

The assessed valuation (net taxable valuation) for the Resource Area was approximately 1.8 billion dollars for the 1984 fiscal year. Eddy County had a total net valuation of approximately $305 million while Lea County's total net valuation was approximately $1.5 billion. In 1984, Eddy County received approximately $900,000 from the Federal Government in "payment in lieu of taxes" (PILT) and Lea County received approximately $228,000. The assessed valuation and the PILT payments for southwest Chaves County were not included.

CHARACTERISTICS OF THE ECONOMY

Ranching Industry

There are 174 grazing allotments in the area, which includes 145 section 3 permits and 29 section 15 permits. Only for the allotments west of the Pecos will the economics be analyzed.

To determine the economic characteristics of the ranching industry only the 132 grazing allotments containing section 3 permits or both section 3 permits and section 15 leases will be considered. Table 3-12 shows the breakdown of those allotments into small, medium, and large categories. It also shows the number of operators by category, number of animal units in each size category, and the percentage of dependency on Federal rangeland for each category.

TABLE 3-10
ESTIMATED TOTAL DOLLAR OUTPUT BY
INDUSTRY PRESENT IN THE
CARLSBAD RESOURCE AREA, 1984

Industry	Total Dollars	% Total[1]
BLM Range Livestock	4,978,449	0.4[2]
Meat Animals	72,912,508	5.7
Other Livestock	5,437,001	0.4
Other Agriculture	28,173,999	2.2
Crude Petroleum and Natural Gas	239,905,850	18.7
Petroleum Well Drilling	30,673,806	2.40
Mine Development Construction	328,946	-
Other Mining	166,414,848	13.0
Construction	140,803,924	11.0
Food Products	9,502,069	0.7
Apparel	4,665,163	0.4
Wood Products	257,108	-
Furniture	96,415	-
Printing and Publishing	8,779,635	0.6
Chemicals	29,242,035	2.3
Petroleum Refining	3,375,936	0.2
Rubber and Plastic	716,196	-
Stone, Clay, and Glass	12,549,176	1.0
Fabricated Metals	7,067,658	0.6
Machinery, except Electrical	8,568,998	0.7
Electrical Equipment	237,388	-
Miscellaneous Manufacturing	1,493,649	0.1
Transportation	54,700,286	4.3
Communications	27,033,496	2.1
Utilities	103,950,716	8.1
Wholesale Grade	72,697,664	5.7
Retail Grade	93,393,768	7.3
Finance, Insurance, Real Estate	55,190,843	4.3
Service	97,116,296	7.5
BLM Rangeland Improvement Project	2,464,117	0.2
TOTAL	1,282,737,000	99.9

[1] Percentages less than 0.1% are not shown.

[2] BLM permitted livestock represents a portion of the operations of an industry; that portion which is dependent on BLM rangeland. The BLM permitted livestock industry is part of the meat animal industry and should not be compared separately with any of the other industries.

TABLE 3-11
ESTIMATED PERSONAL INCOME AND EMPLOYMENT FOR HIRED LABOR IN THE CARLSBAD RESOURCE AREA, 1984

Industry[1/]	Income	Employment
BLM Permitted Range Livestock	481,520	158[2/]
Meat Animals	2,362,320	619
Other Livestock	319,393	30
Other Agriculture	1,825,202	533
Crude Petroleum and Natural Gas	78,031,872	5,710
Petroleum Well Drilling	11,551,274	684
Mine Development Construction	144,894	10
Other Mining	62,669,216	3,694
Construction	51,919,888	2,605
Food Products	1,244,958	139
Apparel	1,410,024	193
Wood Products	72,352	8
Furniture	36,021	3
Printing and Publishing	2,949,609	248
Chemicals	6,924,523	376
Petroleum Refining	332,864	198
Rubber and Plastic	204,182	22
Stone, Clay, and Glass	3,535,415	253
Fabricated Metals	2,108,999	190
Machinery, except Electrical	3,377,435	347
Electrical Equipment	93,537	8
Miscellaneous Manufacturing	584,492	49
Transportation	24,131,824	1,811
Communications	10,440,127	706
Utilities	14,768,810	1,175
Wholesale Grade	30,030,932	2,486
Retail Grade	40,725,800	6,295
Finance, Insurance, Real Estate	17,618,760	1,446
Service	38,916,772	6,264
BLM Rangeland Improvement Projects	1,374,964	44
TOTAL	410,187,979	36,304

TABLE 3-12
RANCH SIZE CATEGORY, NUMBER OF OPERATORS IN EACH CATEGORY, NUMBER OF ANIMAL UNITS, AND PERCENT DEPENDENCY

Ranch Size Category[a/] Lands	Number of Operators	Number AUs[c/]	%[d/] Dependency
Large Cow/Calf	8	500+	55.0
Medium Cow/Calf	23	200-499	64.2
Small Cow/Calf	76	0-199	75.4
Large Sheep - Cow/Calf	7	500+	57.2
Medium Sheep - Cow/Calf	8	200-499	68.8
Small Sheep - Cow/Calf	7	0-199	75.0
Small Sheep	3[b/]	---	---

Source: CRA Range Records Files.

[a/] Indicates class of livestock in operation.

[b/] Three small sheep operations were dropped from further analysis due to an insufficient sample number.

[c/] All AUs shown on table are cow equivalent AUs.

[d/] Percent dependency represents the acerage amount of public lands within each allotment category.

The use of public lands is authorized by permits based on preference. The permit, becomes an integral part of ranch revenues and an important financial asset to the rancher although not recognized by BLM. In 1984, the commercial value for the BLM permit was approximately $1,300 per AU unit and this average value equates to an estimated worth of $34.3 million in the CRA.

Ranch Budgets

Table 3-13 summarized the costs and returns for each ranch size. Small commercial cow-calf operators derive a negative income while all other catagories show a positive income. To offset negative income operators usually rely on supplemental employment either by themselves or family members. Despite poor financial returns from ranching, ranching families choose to maintain their life styles.

An operation with 275 to 325 (average 300) AUs is considered to be an economically viable, selfsustaining unit capable of supporting a family without off-ranch employment or income. Complete individual ranch budgets for each size and class category are in Appendix G.

Minerals and Energy Industries

The characteristics of the minerals and energy industries have been explained under the Minerals and Energy Resources section of this chapter, while the estimated dollar output and personal income figures are shown on Tables 3-10 and 3-11.

TABLE 3-13
ESTIMATED COSTS AND RETURNS FOR ALL RANCH OPERATIONS
IN THE CARLSBAD RESOURCE AREA, 1984

	Cow-Calf Operations			Sheep/Cow-calf Operations		
Budget Items	Small Commercial	Medium Commercial	Large Commercial	Small Commercial	Medium Commercial	Large Commercial
No. of Operators	76	23	8	7	8	7
Total Receipts	884,985.04	1,172,264.23	1,037,862.56	240,728.18	539,748.80	1,105,982.92
Cash Costs	816,391.24	830,593.48	740,079.04	126,271.04	335,983.44	510,825.49
Returns above Cash Costs	68,593.80	341,670.75	297,783.02	114,415.14	203.765.36	635,869.43
Depreciation	239,706.28	197,586.33	251,195.04	47,916.26	121,953.04	240,901.99
Returns to Operator Labor Management Capital	-171,112.48	144,084.42	46,588.48	66,540.88	81,812.32	354,255.44

Source: BLM files

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter provides the scientific and analytic basis for the selection of the preferred alternative. The significant impacts anticipated from the implementation of each of the alternative plans are discussed. Both the beneficial and adverse impacts affecting the environmental components described in Chapter 3 have been analyzed.

The standard stipulations, operating procedures, and mitigation measures that are part of the continuing management guidance for all alternatives were considered in the assessment of impacts.

The specific actions, mitigating measures and livestock grazing related decisions based on the *East Roswell Grazing Environmental Impact Statement* (EIS) (BLM 1979) are incorporated into this document by reference.

Knowledge of the resources within the Carlsbad Resource Area (CRA) and professional judgment, based on analysis of similar conditions and responses in similar areas, have been used to estimate environmental impacts where data are limited.

ASSUMPTIONS FOR IMPACT ANALYSIS

GENERAL

The analysis of impacts is based on the following assumptions:

1. Annual precipitation and climate will be near normal.

2. All management actions will be implemented over a 10-year period.

3. Adequate funds and personnel will be available for implementation.

4. Effects of implementation will be monitored and management adjusted as necessary.

5. No major policy changes will take place.

6. Short term refers to effects occurring within ten years (up to 1996). Long term refers to effects occurring up to twenty years (2006) and beyond. Alternative D_1 (no grazing) assumes a short term of 20 years and a long term of 100 years.

7. Baseline data are accurate.

8. Environmental assessments (EA) will be completed before starting construction of any project.

RESOURCE SPECIFIC

LAND TENURE

The policy and environmental constraints to land disposals as outlined in Chapter 2, "Continuing Management Guidance," will be fully considered on a site-specific basis prior to land tenure adjustment actions.

MINERALS AND ENERGY

Oil and Gas

Oil and gas resources over one-half mile from a drill site cannot be drained without directional drilling.

The environmental stipulations in the Roswell District Oil and Gas EA (BLM 1981) are considered to be required mitigation. These stipulations are currently being implemented and are anticipated to continue in the long term.

Oil and gas development has been occurring in the CRA for at least 50 years. An average of 2,500 acres a year have been approved for oil and gas activities (roads, pads, pipelines, material pits, disposal pits, etc.) between 1981 and 1985. The overall rate of oil and gas development will continue at or near present levels.

Full oil field development in the CRA will take more than 20 years; therefore, assessment of the impacts of all possible oil and gas related actions is beyond the scope of this Resource Management Plan (RMP).

Additional special stipulations will compound the difficulties of lease development imposed by seasonal drilling, no surface occupancy (NSO) stipulations, or off-road vehicle (ORV) limitations or closures.

Oil and gas related projects will be accomplished in a manner similar to previous activity, and will result in similar environmental impacts.

Leasable Solid Minerals

Potash

The management guidance for potash leasing as described in the Potash Leasing Southeast New Mexico Environmental Assessment Record (EAR) (BLM 1975) will continue to apply. No actions in the alternatives described in this RMP will affect the guidance contained in the Secretarial Order (SO) or the oil-potash area management policies currently in effect.

Other Leasable Solid Minerals

As oil and gas drilling continues there will be a demand for saturated brine solutions to drill wells. This would mean that the three producing sodium leases would continue to be worked and a few sodium prospecting permits may be applied for over the next twenty years.

There will be a demand for sulphur prospecting permits of 10 to 12 per year as there has been since the 1960's. Exploration has been south of Whites City.

Salable Minerals

Demand for salable minerals is expected to continue to be dependent on the amount of oil and gas drilling occuring in the CRA. A smaller demand for salable minerals is expected for maintenance of county and state roads in the CRA

Locatable Minerals

Few mining claims are expected to be filed in the CRA.

RANGELAND RESOURCES

Soil and Water

Demands for water supply and concerns for water quality will continue to grow.

Standard stipulations (CRA Office Files) protecting soil and water from impacts associated with mineral exploration and development will be included in mineral leases. Site-specific stipulations will be included in EAs which are prepared for all actions.

Vegetation

Expected changes as a result of implementing intensive grazing systems are projected to improve vegetation condition in the long term. This assumption is substantiated by studies concerning deferred rotation grazing systems by Keng and Merrill (1960). Because deferred and rest-rotation systems are considered to be equal to deferred rotation for vegetative response. It is assumed that these grazing systems will respond similarly.

Livestock Grazing

Increases in available forage are based upon analysis of inventory data and estimation of improved ecological condition. This will result from rangeland improvements, intensive grazing system class conversions and vegetation manipulations.

Additional forage will be authorized for use on a temporary, non-renewable basis for livestock only if it is determined through monitoring studies to be permanently available on a sustained yield basis.

Actual use will be equal to the 5-year average licensed use (1980-84), although a few operations may vary.

The ranch budget models used in the economic evaluations of the management proposals are representations of actual ranching operations in the CRA.

Wildlife Habitat

All actions will be in accordance with existing Federal and State laws and the Department of Interior, Bureau of Land Management policy and manual requirements.

Improvement of habitat quality will increase animal health and numbers within the affected ecosystem.

Deterioration of habitat quality will decrease wildlife health and numbers overall within the affected ecosystem.

Removal of habitat will decrease wildlife numbers.

Presence or absence of water, vegetation, and soil are limiting factors for wildlife numbers.

Current New Mexico Department of Game and Fish (NMDG&F) policies will remain the same.

NMDG&F will successfully control game populations on a Herd Management Unit basis.

Significant increases in sediment yield will adversely affect fisheries.

The condition of the riparian zone will influence the quality of the aquatic environment.

SPECIAL MANAGEMENT AREAS

Recreation

Demand for recreation opportunities, such as ORV and caving activities, will remain proportional to population changes. Other recreational activities, such as hunting, are not related to population changes.

Visual Resources

Any visual changes which meet Visual Resource Management (VRM) class objectives are not considered significant impacts. An action resulting in a change in VRM classification is considered significant.

Any actions which cause short-term impacts are not considered significant where rehabilitation will be implemented to return visual contrast to within acceptable limits within a 10-year period.

Cultural Resources

General and site-specific stipulations will continue to be included in EAs for all actions. Avoidance will continue to be the primary form of mitigation for any impacts.

Cultural resources will continue to deteriorate from natural forces, visitation, and vandalism if corrective and preventative action is not taken.

Increases in site vandalism are directly proportional to new or improved access near cultural sites.

Rights-of-Way

Corridors

Impacts within the existing right-of-way corridors are dependent upon facility development and must be evaluated in a site-specific EA. Since none of the alternatives propose additional corridors, the number of acres susceptible to impact will not increase.

ACCESS

BLM will reserve access across disposed parcels in cases where public access to adjacent land is needed. In most cases, BLM does not have legal access rights to parcels that would be subject to disposal.

There will be no significant change (increase or decrease) in Federal, State, or county maintained public road systems throughout the CRA.

SOCIAL AND ECONOMIC CONDITIONS

Current livestock, and oil and gas market conditions will prevail.

The public opinions, attitudes, and concerns expressed in the Socio-Economic overview (Harbridge House Inc. 1979) prepared for the East Roswell Grazing EIS (BLM 1979) are still representative of the residents of the CRA.

The ranch budgets constructed for this assessment constitute a composite economic model which describes "typical ranches" and are not the budgets of any particular ranch.

The ranch budgets used for this assessment constitute an economic model of ranches as profit-maximizing enterprises and cannot completely describe any behavior that is influenced by noneconomic factors. In this regard, a standard allowance was made for depreciation of ranch equipment and improvements, although some ranch operators do not make full provision for such costs. These ranchers may have fully depreciated their capital investment; therefore, the allowance for depreciation may tend to overestimate the costs and underestimate profits.

Those Livestock operations that have Section 15 permits only do not represent total operations; therefore, when estimating the various size categories, these operations were excluded.

None of the alternatives will change the calf-crop percentage or the average weight of animals marketed.

The ranch budgets were based on total herd sizes rather than just those numbers of Animal Units (AU) dependent on public land. Economic impacts were based on adjustments on public lands as they relate to total operation.

The average tax rate for Eddy and Lea Counties is $12.1 per thousand dollars of assessed valuation, and the assessed valuation is $1.89 per acre.

The price of oil and natural gas will not experience any major changes in price.

Natural gas will not be deregulated by Congress.

Taxation rates and policies concerning oil and natural gas will not undergo any major change.

ALTERNATIVE A

This alternative provides a baseline for comparing the other alternatives by describing the current levels of resource uses and protection. This analysis describes the cumulative effects of continuing current management, both in the short term, up to 10 years, and the long term, up to 20 years.

LAND TENURE

In this alternative, approximately 47,262 acres could be removed from BLM management, with 90 percent of the lands identified for State exchange and the remainder for sale. This represents 2 percent of the Federal lands in the CRA. All of these lands are located in east Lea County except for 2,960 acres located in Eddy County. Total public land acreage disposal by exchange or sale in Lea County could be as much as 5 percent, while in Eddy County the percentage would be negligible. The generic impacts of land sales and exchanges are summarized in Table 4-1 and 4-2, respectively.

Large-scale and rapid land tenure adjustments through sale or exchange are unlikely; therefore, there would be no short-term impacts.

Positive long-term impacts would be increased efficiency and lower cost of BLM surface management of consolidated land ownership patterns. Negative impacts would be associated with the creation of split ownership of the surface and subsurface estates. These impacts would primarily affect oil and gas development.

MINERALS AND ENERGY

Oil and Gas

Areas that would continue to be leased for oil and gas with NSO stipulations include the Seven Rivers Hills, Laguna Plata, Maroon Cliffs, Pope's Well, Lonesome Ridge, and the Red Bluff Reservoir Recreation Area Special Management Areas (SMA). These would increase the area in which oil and gas development could not occur by up to 3,360 acres, depending on current lease status, future development, and existence of any unitization or communitization agreements. This would complicate development of oil and gas leases on less than one percent of the Federal mineral estate.

Implementation of NSO stipulations would not have siginificant effects on oil and gas development in the Seven Rivers Hills, Pope's Well, and Red Bluff Reservoir SMAs due to the small acreages involved.

The NSO stipulations on leases at Laguna Plata, (1,080 acres) would require several wells to be directionally drilled at a cost increase of about 40 percent. Several oil spacing units may be unreachable. NSO stipulations on leases at Maroon Cliffs (1,880 acres) would increase drilling costs to operators by about 40 percent for all directionally drilled wells. A number of shallow oil well locations could prove unreachable. However, existing leases would not be affected by the NSO stipulations.

Current ORV closures (4,615 acres) and limited designations (19,776 acres) would cause slight modifications in seismic geophysical exploration activities in the affected areas. This would not be significant relative to the 2.1 million acres of federal surface estate.

Leasable Solid Minerals

Potash

Under Alternative A, the existing conflict between oil and gas and archaeology will continue as discussed in Chapter 2.

Other Leaseable Solid Minerals

Under Alternative A, there would be no limitation placed on sodium, sulfur, or other leasable mineral prospecting permits. BLM would continue to allow prospecting and exploration for leasable minerals, except in the withdrawn areas shown in Table 2-8.

TABLE 4-1
IMPACTS FROM SALE

Positive	Negative
Potential for placing land in a higher use such as agricultural, commercial, or residential.	Potential loss of resource values, primarily wildlife and recreation.
One-time payment to treasury.	Loss of future revenues from land use authorizations.
Decreased management costs for BLM.	Increase in property taxes for person who purchases public land.
Could relieve current user of user fees.	Loss of future exchange potential as disposable tracts are depleted.
Can be used to solve existing unauthorized uses.	Loss of Payments in Lieu of Taxes (PILT).
Can provide additional land for residential development in urban areas.	Potential economic strains on person who currently uses land but cannot afford to purchase it.
Opportunity for ranchers to consolidate their holdings.	Possible additional encumberence and development costs for mineral right holders as a result from split estate.
	Loss of future open space and parkland which could be conveyed under the Recreation and Public Purposes (R&PP) Act in urban areas.

TABLE 4-2
IMPACTS FROM EXCHANGE

Positive	Negative
Opportunity to consolidate land ownership patterns and reduce management costs.	High cost of processing case work.
	Possible creation of split estate.
Land exchanges would result in increased resource values.	No payment to U.S. Treasury.
No significant reduction in net Federal land acreage	
Land transfers can take place without the burden of purchase price on the non-Federal recipient.	

Saleable Minerals

The effects of existing closures on caliche, sand, and gravel sales are expected to be negligible since supplies are available from other nearby sites.

Locatable Minerals

Existing withdrawals have no significant effects on mining of commodities because the seven affected areas do not have commercial deposits of locatable minerals that cannot be obtained elsewhere in the region.

Summary

Current implementation of NSO stipulations on Laguna Plata, Maroon Cliffs, Pecos River Corridor, Pope's Well, and Seven Rivers Hills would have a minimal adverse impact on the mineral program. Oil and gas NSO stipulations would cause adverse impacts on the Laguna Plata SMA by requiring directional drilling. This would increase the cost of drilling most wells by approximately 40 percent. Other solid leasables would not be affected.

RANGELAND RESOURCES

Soil and Water

Increased erosion, compaction, and loss of soil fertility would continue due to oil and gas development. Most of the locations approved for oil and gas facilities would continue to be surfaced with caliche. Inadequately maintained roads and pads are likely to be susceptible to erosion and become sources of sedimentation. Soils would continue to suffer a long-term loss of productivity due to these activities. Reclamation is rarely fully successful in these areas due to the infertile caliche material and high salt content of the materials within disposal pits.

Public land would continue to be used for disposal pits for drilling fluids and hydrocarbon wastes. Brine and hydrocarbon leaks would continue to reduce soil productivity, and could affect surface water quality. Reduced vegetative cover would cause increased erosion and sedimentation. Local groundwater quality deterioration could also result from accidental spills or improper casing, cementing or disposal procedures.

Areas where NSO stipulations are applied would continue to be protected from most surface disturbance related effects.

Except for withdrawals, the CRA would continue to be open for solid minerals exploration, which could cause some increased erosion and sedimentation. This increase would result from blading roads and building drill pads. Fragile gypsum soils in southern Eddy County, particularly in the Yeso Hills area, are highly susceptible to erosion. Sulphur exploration would have a high probability of increasing soil erosion and sedementation from these soils.

Runoff from tailings and other waste disposal would continue to cause a loss of soil fertility in the potash area. There would be continued local deterioration of groundwater quality due to potash refinery waste disposal, although the groundwater in this area is not potable.

Impacts from mineral material sales would continue throughout most of the CRA. The numerous material pits cause increased erosion sedimentation and loss of soil productivity. These impacts are reduced after successful reclamation.

Most of the CRA would continue to be impacted by extensive ORV and equipment use, including geophysical exploration. These uses cause soil compaction and contributes to accelerated erosion and sedimentation. The gypsum soils south of Whites City are particularly susceptible to these impacts due to sparse vegetative cover which, if destroyed, results in high wind and water erosion and increased sedimentation.

The sandy soils generally located on the east side of the CRA would continue to be lost due to their high wind erodability.

Fragile soils at Maroon Cliffs, Seven Rivers Hills, and Pierce Canyon would continue to be protected from ORV impacts under current ORV management. Rights-of-way corridor designations would reduce surface disturbance, erosion, and sedimentation by consolidating major utility projects in previously disturbed areas.

In general, grazing related watershed condition would remain the same on the west side. Grazing near springs would continue to cause increased erosion and sedimentation into springs. Grazing systems with appropriate rest cycles and use restrictions would decrease erosion and sedimentation in specific areas.

Summary

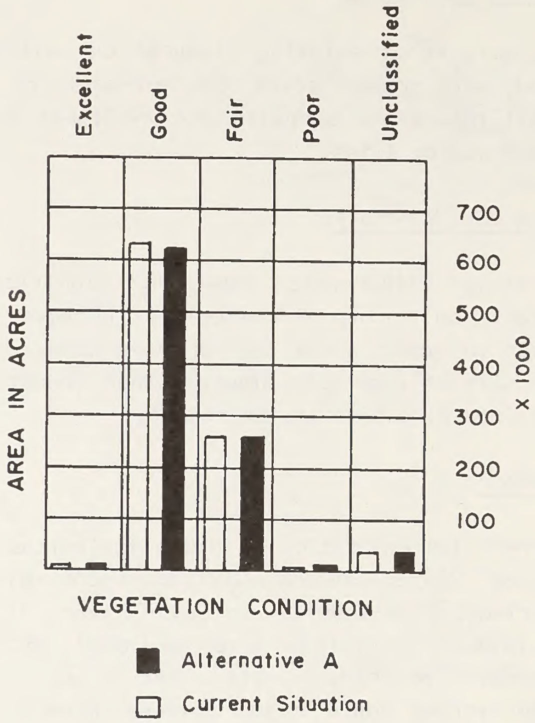
Implementation of Alternative A would result in a continuation of present long-term trends in erosion and sedimentation as a result of mineral and energy development. Watershed condition in areas not affected by minerals activity would remain static. Many highly erodable areas or sensitive water quality areas would not have sufficient protection.

Vegetation

Short-term impacts to vegetation would be a continuation of present trends; many of these changes are subtle and difficult to assess. However, there would probably be some undesirable changes in vegetation due to present grazing use levels. Figure 4-1 projects the expected changes in vegetation in the long term. Unclassified vegetation conditions are presently unknown, but changes will probably occur. Over the long term, the condition on sites within the planning area currently under intensive grazing management (twelve existing AMPs; 200,000 acres) would remain the same or improve.

Vegetation condition would slowly decline to 13,000 acres in excellent condition, 633,000 acres in good condition, 267,000 acres in fair condition, and 10,000 acres in poor condition. See Figure 4-1 for comparison with current condition.

Figure 4-1. Acres of Condition Classes



Locally significant impacts to vegetation would continue to occur on various sites throughout the remaining 760,000 acres currently grazed by livestock and wildlife. Impacts include a decline in vegetation densities, productivity, vigor, reproduction, and available forage.

Minerals development would continue to reduce vegetative cover under current management. Short-term impacts would continue the present trends of vegetative condition. (See Ecological Condition Chapter 3.)

Existing ORV closure and limited designations would have both short- and long-term positive effects on vegetation for the 24,381 acres.

Summary

Vegetation condition trend would continue to decline in the short term. The overall type and productivity of forage species produced on public lands could decline over portions of the planning area in the long term.

Livestock Grazing

Under this alternative, no short- or long-term adjustments in AUMs are projected. Applications for nonuse, nonrenewable use, and changes in season, class, or kind of livestock would be evaluated on demand. This alternative proposes no changes in present management practices and has negligible impacts to livestock grazing. See Appendix D-6a for estimated carrying capacity and management status by allotment.

Summary

This alternative proposes no adjustments in grazing preference. Livestock operators would realize no significant changes in grazing management or livestock production.

Wildlife Habitat

Wildlife habitat conditions would remain static in the short term and decrease in the long term. Reductions in mule deer, pronghorn, antelope, and quail populations would be very slight and would occur only in the long term. Riparian and pseudoriparian habitat would not be expected to improve. Allotment Management Plans (AMP) do not address management objectives and mineral development is usually allowed within these areas.

Sensitive and nongame species habitat would continue to deteriorate.

Effects of oil and gas related activities upon habitat are discussed as surface impacts under the Soil and Water section of this chapter. Changes in vegetative patterns and the extension of the Chihuahuan Desert within the CRA (Gross and Dick-Peddie 1979), compounds problems of habitat loss and poor success of revegetation over the long term. With an average yearly loss of 2,500 acres in oil and gas related activities, habitat condition would continue to decrease. Also, riparian habitat would continue to be affected in the short- and long-terms. Seasonal restrictions on oil and gas activity and limited class of livestock in the 25,000 acre San Simon Swale pronghorn habitat area would continue to limit human disturbance during fawning periods.

Unless mining activities increase, potash would not impact habitat any further. Should industry conditions improve, additional habitat could be destroyed by spoil piles and brine water disposal.

Sulphur exploration has a slightly negative effect on habitat in the short term but cumulative blading and ORV travel would have a greater impact on the fragile gypsum soils in the long term.

Range conditions under current livestock management could slightly decrease in the long term. Riparian and pseudoriparian Special Habitat Sites (SHS) condition would decrease as vegetative diversity and vigor, water quality, and soil stability decline.

Summary

Terrestrial wildlife habitat could decline under this alternative. Game species population would also decline. Current management and protection of Federally listed T&E species would continue. Oil and gas activities would have negative impacts on habitat, especially riparian areas. Potash and sulphur could have significant impacts to general wildlife habitat.

Although there are very few acres of public land adjoining live streams or rivers, land use activities on these areas, e.g., oil and gas, solid mineral mining, and livestock management would continue to create degraded habitat conditions. Vegetation would be removed, soil erosion would increase, undissolved solids would be high, sedimentation would increase, and water pollution would increase in the short and long term. These impacts are not quantified, but the potential of an impact would be assessed individually. Also, land use actions near aquatic habitats would be mitigated through standard stipulations and regulations to minimize their impacts.

Summary

Aquatic habitat would continue to decrease. This decrease is a result of I the lack of riparian/aquatic management in AMPs, 2 the lack of inventory work on perennial water sources, and 3 the lack of public land ownership along perennial water sources. Mineral and livestock production may have significant long-term impacts depending on project location and types of mitigation employed.

SPECIAL MANAGEMENT AREAS

Areas of Critical Environmental Concern (ACEC)

Impacts affecting the six potential ACECs (Chosa Draw Caves Complex, Dark Canyon, Lonsome Ridge, Blue Spring, Yeso Hills, and Pecos River/Canyons Complex) are addressed in general terms under other sections of this alternative, including Soil and Water, Terrestrial Wildlife Habitat, Aquatic Habitat, Cave Resources, Visual Resources, and Cultural Resources.

Recreation

Retaining public lands in public ownership would not affect recreation resources. However, not conducting land exchanges would limit the ability to improve recreation values by acquiring needed tracts adjacent to existing public lands.

Oil and gas exploration and evelopment activity would continue to diminish some recreation opportunities while providing some increased opportunities for access to public lands. The stipulation prohibiting oil and gas drilling or storage facilities within 300 feet of a major drainage slightly benefits recreation users along the Pecos River by limiting some surface disturbance in a narrow corridor. Other disturbances associated with oil and gas development and other resource uses within this area would degrade desired recreation experiences for most users. These would be significant if they occured within the 120 acre site identified for intensive recreation facility development at Red Bluff Reservoir.

The limited semiprimitive nonmotorized recreation opportunities present in the CRA are particularly vulnerable to incompatible recreation use and increased resource development, especially leasable minerals development. Because the land can seldom be returned to a natural condition, recreation opportunities become irreversibly committed to more developed and motor vehicle dependent recreation opportunities. Consequently, primitive opportunities are reduced or eliminated entirely.

Continuing existing management policies for public lands with high value recreation opportunities would eventually result in deterioration of these resource values and degrade desired recreation experience for most users.

The existing five rights-of-way corridors would have minimal impact on the recreation resource. The establishment of new rights-of-way near intensively managed caves, established foot trails, and the Pecos River could result in a moderate to high negative impact. Rights-of-way would degrade the quality of recreation opportunities for most users in these predominantly semiprimitive motorized recreation opportunity settings.

Lack of vehicular access to several large tracts of public land restricts recreational use in these areas.

Summary

The recreation needs of many of those who use the CRA might not be met by continuation of current management. If increased recreation demands are not met with additional management efforts, BLM can anticipate additional user conflicts both among recreation users and with other resources.

Continued oil and gas and other mineral development would further degrade the quality of desired recreation experiences for some users, particularly in areas with high value or scarce recreation opportunities and resources.

Off-Road Vehicles

Because most of the CRA (2,146,619 acres) would be available for motorized vehicle recreation, sufficient ORV opportunities would continue to be available. Continued oil and gas development in the Hackberry Lake, Alkali Lake, and other areas would slightly reduce the quality of motorcycle recreation. But, continued issuance of Special Recreation Use Permits would satisfy the demand for competitive events.

Cave Resources

Most impacts to cave resources from oil and gas development would be prevented by the current stipulation which prohibits drilling within 300 feet or locating fluid pits within 600 feet of a cave entrance, passage or known karst feature. However, some destruction of fragile cave formations and ecosystems could still take place from exploration drilling and blasting, and other surface disturbance activities. The current stipulation allows for excessive surface disturbance during well pad development.

Current minerals management allows for prospecting for high-grade gypsum or, (possible development of caves) for bat guano. This would cause significant adverse impacts to cave resources as well as visual, paleontological, cultural, and recreational values. It could also destroy scientific and educational resources and degrade the recreation experience for most users.

The Chosa Draw Cave Complex area has gypsum deposits which, if leased and developed, would result in significant decreases in the quality of caving and other dispersed outdoor recreation activities. Oil and gas development could adversely impact the sensitive cave ecosystem by contamination of surface water associated with the cave complex.

This alternative would not maintain the sensitive visual resources at cave areas which require intensive management.

Summary

Current withdrawals of locatable minerals for some caves (820 acres), intensive management of 13 gated caves, and protective stipulations adjacent to cave features would provide some protection for cave resources. However, these protective stipulations would be insufficient to protect cave resources from further mining, nearby blasting, and other potentially destructive impacts.

Visual Resources

Continued management of lands east of the Pecos River to meet VRM class objectives would help prevent significant visual contrasts in high quality landscapes, i.e., lower Pecos River (8300 acres) and Pierce and Cedar Canyon area (2,300 acres).

Continued vehicle use restrictions and NSO stipulation on 540 of 2,080 acres of visual sensitive landscapesin the Seven Rivers Hills would partially protect this visually sensitive area.

Where VRM class designations have not been established (west of the Pecos River) each proposed project would continue to be reviewed to consider impacts to visual resources and develop appropriate mitigation. The visual resources would continue to be vulnerable to the pressures created by surface disturbance from leasable mineral and other resource development.

The lack of SMAs could result in the significant deterioration of visual values in several areas.

Continued large-scale development of leasable minerals and associated rights-of-way, would cause short- and long-term negative impacts on visual resources throughout much of the CRA due to accumulative change in the existing landscape. Individual actions would meet established VRM class objectives. Mineral material sales, especially from caliche pits, would continue to cause low to moderate visual intrusion in most cases.

Unrestricted motor vehicle activity could ultimately reduce the overall visual quality of the CRA. Additional road development would increase surface disturbance and decrease scenic quality A and B rated landscape toward lower rated scenic quality C. Rights-of-way established in the vicinity of sensitive visual resources (such as caves) the National Park, major transportation routes, or recreation hiking trails, would have a moderate to high negative visual impact.

Summary

Established VRM class designation on the east side of the Pecos River and existing policy would prohibit extensive changes in VRM classes there. However, lack of VRM class designations west of the Pecos River, the lack of SMAs to protect important visual values, and continued expansion of oil and gas and other resource developments would result in gradual, moderate degradation of visual quality throughout the CRA.

Cultural Resources

Continued oil and gas lease development would continue to provide basic survey information for cultural resources. Properly implemented data recovery plans for significant cultural resources, developed in those cases where adverse impacts are unavoidable, can provide valuable new information for cultural resources.

A few lease operations are under special surface disturbance stipulations which enhance the preservation of cultural resources. NSO stipulations on oil and gas leasing would continue to protect affected areas from some disturbances. Even though most lease operations are implemented to avoid "direct impact" to cultural resources, lease development often leads to a cumulative adverse impact. The sources of these cumulative effects are as follows:

Increased access promotes increased casual use of public lands. This, in turn, promotes unauthorized collection of cultural materials, a serious source of informational bias (e.g., loss of datable artifacts) for recorded sites in the CRA.

Lease development activities tend to destablize sand dune surfaces, thus degrading the environmental context of cultural sites located in dunal environments. When 40-acre well spacings are used in lease development, the general degradation of environmental context is an acute problem.

The small-scale survey strategies employed for oil and gas actions increase the opportunity for inadequate and inaccurate field determinations of the cultural resources located during survey. This is because oil and gas survey sizes average 4-5 acres and site sizes usually exceed 10 acres.

As stated elsewhere, 36 CFR 800 requires consideration and mitigation of indirect cumulative impacts. Indirect impacts are the major focus of the monitoring and patrol programs.

Continued restrictions on oil and gas drilling within known economic potash reserves would moderate the surface disturbance which normally accompanies oil and gas development. This protects the integrity of cultural resources on the surface. Surface disturbance arising from potash surface operations would continue to be mitigated as required by law and BLM policy.

In site areas within the Laguna Plata Archaeological District, surface disturbance restrictions have been placed on some potash leases. These restrictions protect some cultural resources from adverse impacts from potash development.

"Restricted surface disturbance" is defined as follows:

> No surface disturbance will be permitted until a representative sample of cultural materials is excavated from the affected site. Further, surface disturbance activities will be restricted and confined so as to minimize or avoid cumulative indirect effects on cultural resources in this area.

Slow subsidence of mined-out areas will alter the angle and direction of slopes within the subsidence areas. This change in overall land form shape may have a long-term cumulative impact on the integrity of cultural resource sites.

The impacts of material sales on cultural resources will continue to be mitigated as required by law and BLM policy; however, the lack of monitoring on material pits has produced and will continue to produce residual impacts to cultural resources.

The direct impacts of locatable mineral exploration and development would be mitigated as required by Federal law and BLM policies; however, there would be long-term cumulative effects on cultural resources if economic reserves of locatable minerals were discovered.

Except for grazing, the Department of Energy (DOE) management of the Waste Isolation Pilot Project (WIPP) and the Gnome sites would not permit additional mineral extraction related surface disturbance; therefore, the preservation of cultural resources would be enhanced in these two withdrawal areas. Withdrawals favor preservation of cultural resources because they effectively prevent the surface disturbance associated with mining exploration and development.

Rangeland management has little effect on cultural resources because surface disturbing projects are conducted in compliance with Federal laws and policies. Two exceptions to this assessment are vegetative treatments and use of intensive grazing systems.

Vegetative treatments may affect cultural resources in two ways:

> Contamination of radiocarbon samples from sprayed hydrocarbons and hydrocarbon derivatives, and increased short-term erosion may disturb the integrity of buried cultural deposits.
>
> The use of intensive grazing systems may affect cultural resources by excessive trampling disturbance by large numbers of animals.

Full fire suppression, on 2,166,180 acres, if implemented on, or near, historic or prehistoric site may disturb some or all of the affected site's depositional integrity.

SMAs are usually protective of the cultural resources within its boundaries, regardless of its primary objective. This is because SMAs normally restrict access and/or surface disturbance to protect recognized resource values. Four SMAs (15,827 acres) are currently established specifically for the purpose of enhancing protective management of cultural resources.

Closed ORV designations improve the protective management of cultural resources by restricting access, which discourages unauthorized collection and by preventing ORV disturbance of cultural deposits. Two of the three current ORV closures have been placed on Laguna Plata and Pope's Well specifically for the purpose of protecting cultural resource values. The Pierce Canyon closure also serves this purpose since there are many important cultural resource values there as well.

Limited ORV designations have the same benefits to cultural resources as closed designations, but to a more limited extent, because existing roads and trails usually remain open which improves opportunities for site impacts through unauthorized use. Of the three current limited ORV designations, the restrictions placed on Maroon Cliffs are specifically protective of cultural resources while permitting controlled recreational use of the area.

Open ORV designations have moderate to extreme adverse impacts to cultural resources depending on the fragility of the soil matrix. Open ORV designations also provide maximum access for unauthorized artifact collectors.

This alternative would have adverse impacts to cultural sites due to off-road driving, site erosion, and surface disturbance, which leads to increases in vandalism. Increased access would accelerate these impacts, especially in areas which are not protected by ORV designations or rough terrain. Cultural Resource Management Plans (CRMP) and ORV management would benefit cultural sites by increasing public awareness and minimizing visitor impacts to sites.

Summary

Under Alternative A, 0.3 percent of the CRA is accorded some form of protective management. The direct impacts of oil and gas, solid minerals, locatable minerals, and salable mineral programs will continue to be mitigated according to Federal laws and BLM policies. The irreversable indirect cumulative impacts on cultural resources will continue to be the focus of monitoring and patrol programs. Nevertheless, there will continue to be long-term indirect effects from the minerals program. Rangeland management and fire suppression policies will have few significant long-term impacts on cultural resources; however, current access and ORV management policies will continue to have significant long-term impacts.

Paleontological Resources

Continuation of current management practices may not adequately protect vertebrate paleontological resources from leasable, locatable, and salable mineral development.

Dry Cave would still be managed to provide some protection for the significant vertebrate paleontological deposits, thereby requiring special permits for scientific use only and by restricting drilling within 300 feet of currently known cave passage. However, the area would remain open to mineral material sales and subject to other surface disturbing activities.

Rights-of-Way

Avoidance Areas

No significant effect. Existing avoidance areas totalling 7,398 acres (0.3 percent of the CRA) would continue to be managed as avoidance areas.

ACCESS

Current management requires that existing access rights be retained wherever possible.

Resolution of access problems, based upon existing land use decisions or in areas not covered by land use plans, would take place as funding and manpower allow. Because there would be no special emphasis to resolve access problems in this alternative, it is unlikely that there would be a significant increase in access to public lands.

Access restrictions to benefit other resource values would be continued in five areas. Additional restrictions to protect other resource values, other than actions mandated by law or policy, would not take place and could result in the deterioration or loss of those values.

SOCIAL AND ECONOMIC CONDITIONS

Because the objective of this alternative is to continue management of the CRA under existing land use plans, neither the social structure nor the economic structure would change.

Any change in the livestock or mineral and energy industries would be as a result of national and international market conditions and not due to BLM actions.

Table 4-3 shows the existing jobs and income generated by the livestock industry which was analyzed in the economic input-output model.

TABLE 4-3
PERSONAL INCOME AND EMPLOYMENT
(existing)

Industry	No of Jobs	Income
BLM Permitted Livestock	158	$ 481,520
Related Livestock	649	2,681,713
Other Industries	35,497	407,034,539
Total	36,304	410,197,772

Source: BLM input/output (I/O) model.

ALTERNATIVE B

This alternative emphasizes production and/or consumption of resources. High priority would be given to programs which might improve economic conditions in the CRA.

Alternative B is more protective than Alternative A partially because of lack of planning on portions of the CRA and partially due to changes in or to ensure conformance with various laws, regulations, and policies. Consequently, this alternative provides the minimum acceptable level of resource protection while still having only minimal impacts on industry.

LAND TENURE

This alternative would result in a more active land tenure adjustment program. Both sales and exchanges would increase impacts created by disposal actions regardless of the method used to carry out the transaction (see Tables 4-1 and 4-2). Emphasis on land sales would reduce the potential for future land adjustments by depleting the amount of land available for future exchanges. This could result in a less desirable final ownership pattern than relying primarily on exchange.

The main benefit of exchange is that it tends to balance the impacts of disposal with those of acquisition. By regulatory requirement, all land exchanges must result in a net increase in public values.

Long-term impacts of land tenure adjustments would be negligible, since the net acreage in Federal ownership would not differ significantly from the current situation; however, management should benefit from a more consolidated land pattern. The consolidation of public land ownership patterns in the retention zone would result in better management of those lands. In an exchange, the same number of acres would be disposed of as would be acquired.

Most of the isolated tracts in the disposal zone were eliminated from past patent applications because of such physical characteristics as steep slopes, rock outcrops, etc., that minimized their value for agricultural use. Now, most of these tracts are too isolated and inaccessible for commercial or residential use. As a result, it is unlikely that more than 50 percent of the land meeting disposal criteria could actually be sold or exchanged. Therefore, a large-scale, rapid, land tenure adjustment program is unlikely.

The disposal of 220,700 Federal surface acres with retention of the mineral estate would increase split estate management by approximately the same number of acres. Transfer of State surface with non-Federal minerals to BLM through exchange would add to this problem. State surface land with Federal minerals would be a high priority for exchanges in order to minimize the split estate acreage.

Disposal of suitable tracts within the resource area would be unlikely to cause any significant impact to public land resource values or to the local economies. The only potentially significant impacts would be to individual land users or owners of land adjacent to, or surrounding, disposal tracts. Property taxes and PILT to the county would be slightly affected.

MINERALS AND ENERGY RESOURCES

Oil and Gas

NSO stipulations would be increased by 7,017 acres (from 4,740 to 11,759 acres) in 16 SMAs. They would be removed from the Laguna Plata and Maroon Cliffs Archaeological Districts. In addition, surface occupancy may be prohibited on 100-year flood plains and adjacent to surface water through the application of special stipulations.

NSO stipulations would increase drilling costs by about 40 percent for directionally drilled wells, and may preclude drilling many shallow oil wells. In large acreage tracts, many shallow well sites could be foregone, resulting in loss of royalties to the government and loss of lease bonuses and rental income as unreachable tracts go unleased. Many of these areas designated to be leased with NSO stipulations, would become difficult to administer as substantial portions are now under lease without the NSO.

Parcels of land in McKittrick Hill Cave Complex, Fence Canyon Caves Complex, Little Manhole/Big Manhole Caves, Yellow Jacket/Lair Caves, and Pecos River/Canyon Complex are categorized as areas of high potential. Several areas of 50 acres or less fall under areas of high potential, but would not be significantly impacted by NSO stipulations.

Many of the small areas, for example, the Potash Bull Wheel and Pope's Well would have no impact due to their small size.

The 191,534-acre increase in special surface disturbance stipulations in 16 SMAs would reduce available acres for developed facilities placement. The increase in costs of drilling cannot be estimated without analyzing specific stipulations.

Seasonal stipulations would restrict drilling activities for 9 months each year within the Los Medanos Raptor SMA. Drilling would not be allowed within one-eight of a mile of known heronries in the Phantom Banks Heronries SMA. This distance would protect 32 acres per heronry. In addition, drilling would not be allowed within one-fourth miles of known heronries (126 acres) for four months each year. Exact total acreages affected by these seasonal restrictions cannot be determined because they are linked to the number of raptor and heron nests. These seasonal restrictions are unlikely to significantly impact oil and gas development due to the small sites involved.

ORV closures and restrictions would prohibit seismic exploration and other motorized equipment use over 54,055 acres in 30 areas. Special surface disturbance stipulations would affect motorized equipment use on an additional 529,779 acres, an increase of 144,695 acres (38 percent over Alternative A). Impacts would be significant for certain leases, since there are only 385,084 acres affected by similar restrictions under current management.

Leasable Solid Minerals

Potash

The removal of the NSO stipulation from Laguna Plata and Maroon Cliffs would reduce a potential conflict between planning and the actual lease conditions. Maroon Cliffs was identified as a preferred site for a potash refinery in a groundwater study of the potash area. Mississippi Chemical Corporation proposed building a large refinery on the top of the Maroon Cliffs in 1975.

Other Leasable Solid Minerals

The increase in the acreage covered by NSO stipulations from 11,640 acres to 21,631 acres will decrease the acreage available for prospecting permits by 9,991 acres. The effect of the decrease is impossible to quantify because there are no core logs showing what is underground in these areas. If a significant deposit were located under an NSO area, it might still be mined by sinking a shaft outside the protected area, but solution mining of salt or Frasch mining of sulphur would not be permitted.

Salable Minerals

Salable mineral disposal would be significantly reduced in the Pecos River Corridor and Pecos River/Canyons Complex SMAs. This would have adverse impacts on oil and gas lease development that are beyond a reasonable distance from mineral location. These operations would have to find alternative economically feasible sources of caliche, sand, and gravel.

Locatable Minerals

The amount of acreage closed to locatable minerals would increase but the small chance of a valid mining claim being started in the closed area is very small.

Summary

Special stipulations would increase in this alternative, having an adverse impact on oil and gas and salables, while impacts on the remainder of the mineral programs would be minimal. NSO stipulations would be increased by 7,017 acres. This would require the operator to directionally drill deeper wells on larger SMAs, increasing the cost by 40 percent while many shallow wells could be eliminated. Special surface disturbance stipulations could reduce acres avaiable for developed facilities by 191,534 acres. Seasonal drilling stipulations will limit drilling and access to well sites causing possible untimely delays. Solid leasables and locatables would not be significantly impacted by this alternative.

RANGELAND RESOURCES

Soil and Water

Impacts to Soil and Water due to mineral activity would be similar to those discussed for Alternative A. Acreage in 14 SMAs would be protected from the increased erosion, surface disturbance, and loss of soil fertility resulting from oil and gas exploration and production. Cottonwood Spring, Ben Slaughter Draw and Spring, and Pecos River/Canyons Complex would be protected from increased erosion, sedimentation, and potential contamination from oil and gas development. However, erosion would increase on Maroon Cliffs as a result of removing the NSO stipulation.

Acreage in 17 SMAs would be protected from increased erosion due to restrictions on surface disturbance from solid leasable activities. Potential surface disturbance and resulting sedimentation from sulphur exploration would be decreased at four springs. All springs would be protected against accelerated sedimentation due to prohibition of new mineral material pits.

Fragile soils in the Pecos River/Canyons Complex and water quality at Ben Slaughter Draw and Spring would be protected from increased erosion and sedimentation resulting from any mining claim activity.

Restricted surface disturbance on 552,237 acres in the CRA would allow for better management of these areas to reduce erosion and sedimentation, and protect water quality. Fragile soils at Maroon Cliffs, Yeso Hills, and the Pecos River/Canyons Complex would particularly benefit as would water quality in the Springs Riparian Habitat areas.

Limiting ORV use in 50,059 acres would reduce erosion, compaction, and sedimentation, especially for fragile soils in Yeso Hills. Reduced sedimentation in both the short- and long-terms into the Springs Riparian Habitat areas would result from closing those areas to ORV use.

Vegetation treatments and grazing systems on I catagory allotments would tend to reduce erosion and sedimentation. In areas proposed for no grazing, increased ground cover would result in decreased erosion and sedimentation. This would be true for fragile soils in the Pecos River/Canyons Complex SMA. Decreased sedimentation as a result of an initial reduction of grazing would also improve water quality in Springs Riparian Habitat areas in both the short- and long-terms.

Summary

Implementation of Alternative B would result in continued long-term loss of soil productivity and increased erosion and sedimentation from mineral development in both the short- and long-terms. Due to restricted surface use many highly erodable areas and sensitive waters would be protected in the long-term. A significantly greater acreage would receive more intensive forage management under this alternative, which would improve watershed conditions in many areas in both the short- and long-terms.

Vegetation

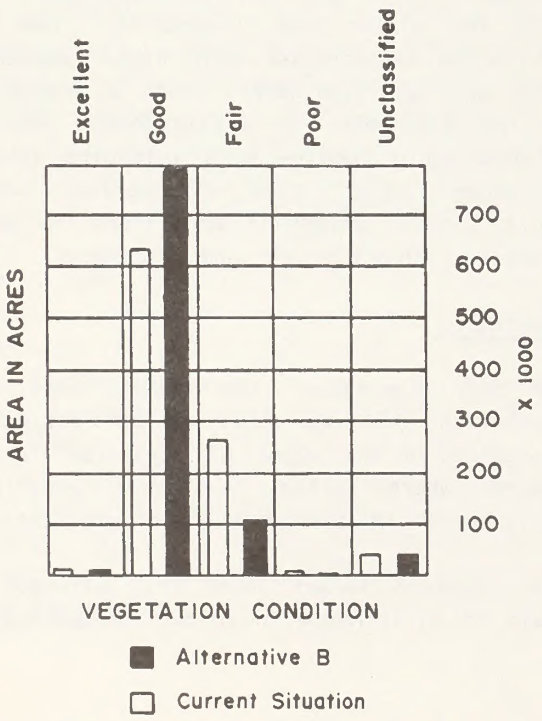
The only significant short-term impacts to vegetation that would occur are projected increases in the vigor of preferred forage plants, where initial livestock reductions would result in lowered levels of utilization.

The long-term impact under this alternative would be an increase in production and cover of desirable forage species preferred by grazing animals. Proper management, which provides for rest during critical periods of plant growth, could lead to an increase in desirable plant species composition. Reduced grazing pressure would increase plant vigor, leading to increased seed production and revegetation by seedlings, rhizomes, and stolons. If these desirable plants are the climax species, they would outcompete the lower value species and reinvade the site (Stoddart et al. 1975).

Figure 4-2 illustrates the expected long-term changes in vegetation condition. Vegetation condition would significantly improve to 13,000 acres in excellent conditions, 799,000 acres in good conditions, 110,000 acres in fair conditions, 1,000 acres in poor conditions.

Projections are based on the potential of existing vegetation to respond to changes in grazing management. The major long-term impacts to vegetation would be an improvement in the type and productivity of forage species on sites that are currently in poor or fair condition. Under intensive management a substantial number of sites would be converted from poor to fair condition and from fair to good condition.

Figure 4-2. Acres of Condition Classes



Proposed rangeland improvements and treatments would be necessary to implement management actions and would have positive impacts to vegetation. This would improve livestock distribution, the production of more, better quality forage, and would increase livestock production.

Increased vegetation densities, productivity, and available forage would result from the proposed vegetation treatments.

ORV restrictions would have both short- and long-term positive impacts to vegetation by limiting surface disturbances.

Existing and possibly expanded limited fire suppression plans would affect vegetation resources in the long-term by allowing more desert shrub dominated acreage to burn naturally. This would allow reestablishment of herbaceous vegetation.

Summary

In the long-term, the overall types and productivity of forage species produced on public lands would improve under this alternative. Rangeland improvement projects would lessen some of the adverse impacts to vegetation from minerals and other development.

Livestock Grazing

Under Alternative B, an initial reduction of 24,859 livestock Animal Unit Months (AUM) would occur in intensively managed allotments, which would result in a decrease of 12 percent of the current active preference. These initial adjustments are needed to help achieve the management actions developed for each allotment in the I Category.

In the long term, 232,417 AUMs would be made available for livestock use, an increase of 17 percent over the 5-year actual use. This projected increase of livestock forage is dependent on implementing grazing systems, installing rangeland improvements, and establishing vegetation treatments to improve forage productivity and distribution patterns.

The impacts to each livestock operator would vary according to how grazing use in the affected allotment fits into the total ranch operation. Increases or decreases of more than 15 percent of current authorized use would normally be phased in over a 5-year period, thus allowing the operator to secure alternative pasture or forage and/or to reduce herd size.

Summary

Short-term impacts to livestock grazing are mitigated by the nonuse that has typically occurred. There would be an initial loss to livestock operators because of lowered ranch values in the short-term.

In the long-term, livestock operations would realize gains through significant increases in livestock production.

Wildlife Habitat

Most impacts to terrestrial wildlife habitat are similar to those listed under Alternative A. In addition, implementing Cooperative Management Plans (CMPs) for Catagory I allotments (66), a Habitat Management Plan (HMP) for 161 acres of springs, two ACECs for 9,850 acres of fragile unique habitat, and an RNA of 1,520 acres for the Pecos River and associated riparian habitat would moderately improve riparian habitat conditions moderately, and slightly improve rangeland habitat conditions in the long-term. Mule deer populations would remain stable (9,100) and pronghorn numbers would increase slightly (230).

As much as 127,600 acres would be treated as SMAs requiring special stipulations and intensive management. Riparian habitat plays a major role in wildlife habitat under this alternative and succeeding alternatives. Its high value, especially for providing diverse bird habitat in Desert ecosystems (England, et. al., 1981) is very sensitive and susceptible to various land uses (Platts 1984). As a result, all riparian habitat within the CRA would be managed to prevent surface disturbing activities.

All mineral development would be prohibited on 1,105 acres of Federal candidate and listed T&E species habitat. ORV use would be limited to designated routes and grazing would be disallowed on 340 acres of T&E habitat. As a result, habitat condition for Federal and State listed plants and animal species would improve moderately. A 100 acre RNA for Notice of Review ramshorn snail would maintain and improve its pseudoriparian habitat.

Oil and gas activities would have similar effects upon wildlife habitat as those described in Alternative A. NSO of 11,757 acres and restricted surface disturbance stipulations on 552,237 acres would moderately improve habitat conditions.

Seasonal restrictions would also be implemented within one-quarter mile of active raptor nest sites and great blue heronries within two SMAs (116,160 acres). Restrictions would be deleted on the 25,000 acre San Samon Swale pronghorn antelope habitat area.

Development of an ACEC (5,460 acres) in Yeso Hills would significantly improve and protect fragile gypsum habitat from surface disturbing activities.

Livestock removal on 2,139 acres would significantly improve riparian and endangered species habitat conditions. This would prevent soil erosion, and relieve grazing pressures on native vegetation necessary for wildlife and T&E species.

Summary

Terrestrial wildlife range habitat would generally remain static but a minimum of 2000 acres of riparian habitat would improve significantly in the short- and long-terms. Protection and management of T&E species would increase with moderate improvement of 1,135 acres of habitat conditions. Mineral industries would continue to have a moderately negative impact upon wildlife habitat outside of riparian areas.

Improvement of riparian habitat condition would also improve aquatic habitat. This would provide better quality habitat for several Federal and State listed endangered species because of reduced sedementation. Degree of habitat improvement would not be quantifiable but reduction in soil erosion and revegetation of stream banks would benefit aquatic ecosystems.

Summary

Habitat condition would improve as a result of SMAs, CMAs, and added protective measures for riparian habitats. SMAs and protective designations would also improve T&E protection and habitat condition. General wildlife habitat condition would continue to decline at a moderate pace in the short and long term, due to increased industrial production.

SPECIAL MANAGEMENT AREAS

Areas of Critical Environmental Concern

Impacts affecting the six potential ACECs are addressed under other sections of this alternative, including Soil and Water, Terrestrial Wildlife Habitat, Aquatic Habitat, Cave Resources, Visual Resources, and Cultural Resources.

Fire Management

Disposing of isolated parcels of public land would reduce fire protection and suppression program costs. Isolated parcels require more fire control efforts because doubts usually exist about ownership. Many fires are suppressed to protect surrounding private lands.

Limited suppression would result in additional acres being burned and would produce more usable livestock forage and wildlife habitat. It would also protect sensitive resources. Fire protection and suppression costs would decrease within these areas.

Recreation

The impact to recreation due to land tenure adjustments would be the same as Alternative A.

The impacts on dispersed recreation opportunities in most of the CRA would be similar to those under Alternative A. In the long term there would be a general decline of certain types of recreation opportunities.

Water-based recreation activities on the Pecos River upstream from Red Bluff Reservoir [within the Pecos River Corridor Special Recreation Management Area (SRMA)] would likely have a substantial negative impact from oil and gas exploration and development. This would reduce the desired recreation experience of most users, and would change this semiprimitive motorized recreation opportunity to a roaded natural recreation opportunity. The floodplains stipulation would have the same impacts as identified in Alternative A.

Development of recreation day use and campground facilities at Red Bluff Reservoir within the 120-acre Pecos River Corridor SRMA would ensure continued access and managed use of the area for boating, fishing, and other water-based recreation activities.

The establishment of other SMAs would enhance the recreation opportunities in the CRA. About 2,240 acres of semiprimitive nonmotorized recreation opportunities would be protected, as well as 26,510 acres of semiprimitive motorized recreation opportunities.

The quality of recreation opportunities is dependent on several management prescriptions proposed for the SMAs (see Appendix E). Many of the proposed actions, including managing to protect scenic values, closure to ORV use, limiting ORV use to designated routes, locatable mineral withdrawal, closure to geophysical operations, NSO lease stipulations, closure to solid minerals leasing, and protection of other resource values would encourage the maintenance of these special recreation opportunities as they currently exist. This alternative would provide for a moderate level of protection of the special recreation opportunities.

The establishment of rights-of-way avoidance areas would provide partial protection of special recreation values in 11 areas covering 8,620 acres.

The lack of legal access at Big Canyon of Lonesome Ridge SMA and in the Dark Canyon SMA hinders recreation opportunities in these areas.

Summary

Impacts on dispersed recreation uses would be similar to those in Alternative A. Establishment of several SMAs having important recreation resources; i.e., Pecos River SMA, Cave Resources SRMA, Dark Canyon ACEC, and Lonesome Ridge ONA, would provide some protection of recreation opportunities in these areas on both the short- and long-terms. Development of recreation facilities at Red Bluff Reservoir would meet visitor needs and provide protection of resource values at this 120 acre site in both the short- and long-terms.

Off Road Vehicles

The open ORV designations are a continuation of the existing situation and would result in continued availability of sufficient recreational ORV use opportunities. ORV use could increase significantly in the longterm, but would be concentrated on designated open lands.

Closure of nine areas (see Table 2-12) totalling 3,996 acres, and limiting vehicle use to designated routes (see Table 2-11) in twenty locations totalling 50,059 acres would result in minor adverse impacts by eliminating ORV use in these locations.

Establishment of the Hackberry Lake and Alkali Lake Intensive ORV use Areas would help to concentrate trail bike ORV use and help limit deterioration of sensitive resource values elsewhere in the CRA, in both the short- and long-terms.

Summary

Impacts on ORV use would be similar to Alternative A except for slightly adverse impacts from minimal ORV closures and limitations. Also, establishment of the Hackberry Lake and Alkali Lake Intensive ORV Areas would ensure that other uses would not significantly interfere with ORV use in these areas.

Cave Resources

Caves within the cave resource primary occurrence zone (387,000 acres) not identified for intensive management would have the same 300-foot no oil and gas drilling buffer stipulations as under Alternative A. The increase of 37,000 acres for the primary cave occurrence zone from Alternative A better delineates where cave resources are known and likely to be discovered within the CRA. This assessment is based on geology of the region. Sensitive valves of known caves in the cave resource primary occurance zone would be protected from exploration and development of leasable solid minerals.

Designation of the Cave Resource SRMA (4,460 acres) provides protection of most gated caves and five ungated caves. These caves presently receive and require intensive management to protect their unique, fragile, and nonrenewable resource values while still allowing for appropriate recreational use. Under this alternative, management actions (See Appendix E) would provide adequate protection for three cave management units and their existing recreational settings: Little Manhole/Big Manhole Caves (100 acres), Mudgetts/Little Mudgetts Caves (50 acres), and Yellowjacket/Lair Caves (260 acres). The remaining four cave management units of the SRMA (McKittrick Hill Caves, 3,020 acres; Lost Cave, 10 acres; Fence Canyon Caves, 300 acres; and Chosa Draw Caves, 720 acres) would be subject to direct negative impacts caused by mineral exploration and other development. The SMAs would be of insufficient size to be adequately managed for desired recreation opportunities.

Designation of National Natural Landmark status for the four recreational caves of the

McKittrick Hill Caves Complex and Dry Cave gives recognition of their diverse nature and unique resource values (1,200 acres).

Honest Injun Cave, presently gated, would have adequate protection measures implemented to manage its cultural values and avoid health hazards exposure to the public.

Summary

Expanding the cave resource primary occurrence zone would increase protection of caves in this area. Designation of the Cave Resources SRMA would provide some protection for all intensively managed cave areas in both the short- and long-terms. It would adequately protect cave resources in three of the cave areas but would not provide complete protection for four of the areas because of continued mineral exploration or an insufficient buffer area for the resource in both the short- and long-terms.

Visual Resources

Establishing VRM objectives for the currently undesignated 965,000 acres would help reduce potential excessive visual intrusions to landscapes with high scenic quality or high visual sensitivity. Visual resources are an important aspect of the Lonesome Ridge ONA (2,240 acres), Guadalupe Escarpment Scenic Area (8,820 acres), Dark Canyon ACEC (3,950 acres), Pecos River Canyons Complex (4,390 acres), and most units of the Cave Resource SRMA (4,460 acres). This alternative would emphasize the higher scenic quality and/or visual sensitivity of these areas, and would retain or improve their natural appearance.

Portions of some SMAs would be either up-or down- graded in VRM classes from the inventory class determinations in order to facilitate management objectives of these SMAs and to resolve conflicts between minerals development, visual resources, and other resources.

Lonesome Ridge ONA (2,240 acres) would be upgraded and managed as VRM Class I. Upgrading from VRM Class III to VRM Class II on 4,150 acres for certain intensively managed cave areas would aid in retaining of these relatively undisturbed settings. The downgrade of about 1,100 acres to a VRM Class III in the Pecos River/Canoyons Complex SMA and 3,120 acres in the Dark Canyon SMA would facilitiate minerals and other resource development.

Visual intrusions and changes would be unavoidable in areas disturbed by mineral extraction activities and rights-of-way development. Seasonal drilling restriction in Zone 2 of Dark Canyon would lessen the adverse visual intrusion viewed by summer visitors of Carlsbad Caverns National Park.

The establishment of fifteen rights-of-way avoidance areas for 11,990 acres would help protect high scenic quality or highly sensitive visual resources.

The Guadalupe Escarpment Scenic Area (8,820 acres) would be managed in accordance with VRM Class III objectives. Multiple-use activities would likely result in long-term degradation of highly sensitive visual values in this area.

If scenic quality Class A land is managed as VRM Class I or II there should be minimal adverse impacts on high quality visual resources. If suitable visual quality objectives are not applied on scenic quality Class B and C land, then some significant adverse impacts could occur.

Vegetation treatments would result in direct impacts to visual resources on 199,000 acres. The short-term impact of dead and dying brush would be significantly reduced in the long term as grasses and forbs are reestablished. Other rangeland improvements would have a slight overall adverse impact on the area's visual quality.

Limited fire suppression would benefit visual resources in the long term for most SMAs by avoiding surface damages caused by full suppression practices. Short-term impacts would be similar to those of vegetative treatment.

Summary

Designating VRM classes west of the Pecos River would reduce potentially high adverse visual intrusions in this area. However, continued oil and gas and other development would gradually reduce visual quality throughout the CRA. Highly sensitive visual resources adjacent to Carlsbad Caverns National Park and Lincoln National Forest boundaries would be subject to moderate change of the area's characteristic landscape.

Cultural Resources

NSO lease stipulations would be applied to 16 SMAs totalling 4,487 acres. Of these SMAs, the NSO stipulation specifically affects the Potash Bull Wheel and Pope's Well cultural SMAs. However, the NSO stipulations would be removed from Laguna Plata and Maroon Cliffs. This would diminish the protective management opportunities for these cultural areas by making them vulnerable to the indirect and cumulative impacts of oil and gas and potash development as discussed in Alternative A.

The Wilderness IMP stipulations would be removed from 6,283 acres in Dark Canyon and Lonesome Ridge. However, all but 2,300 acres would be protected by other special stipulations. This would have the same impact on the cultural resources of these areas as were described in Alternative A for oil and gas drilling with restrictive stipulations.

The direct and indirect impacts of potash and other solids leasing would be the same as for Alternative A. For Alternative B, an additional 8,262 acres would be closed to solids leasing. This would enhance the preservation of cultural resources by preventing the direct and indirect impacts of solids leasing development.

The impacts of locatable mineral exploration are the same as discussed in Alternative A except that an additional 19,525 acres of Federal land would be withdrawn from locatable minerals exploration.

The direct and indirect impacts of mineral materials sales are the same as for Alternative A except that an additional 42,941 acres of Federal land would be withdrawn from mineral materials sales. Specifically, 12,423 acres at Maroon Cliffs would be withdrawn to mitigate the impacts of mineral material sales on cultural resources.

The general impacts of SMA designations are discussed under Alternative A. Under Alternative B, a total of 603,152 acres are designated as SMAs. The purpose of most of the designations is to manage resource values other than cultural resources; however, the protective restrictions placed on these areas protect cultural resource values as well.

The impacts of limited and full fire suppression techniques are fully analyzed in Alternative A. The impacts under Alternative B are the same except that additional acreage would be subjected to modified fire suppression techniques.

The impacts of ORV "open," "limited," and "closed" designations are described in Alternative A. In Alternative B, 36,346 acres are designated as "limited" ORV. Of these areas, Laguna Plata (3,360 acres), the Poco Site (51 acres), and Bear Grass Draw (320 acres), are Cultural Resource Management Areas (CRMA). The protective impacts of a limited designation have already been discussed, however, in the case of Laguna Plata, the ORV designation is downgraded from closed to limited, thus, diminishing the ORV protection for this area.

Establishing right-of-way avoidance areas for the Potash Bull Wheel, Pope's Well, and the Pecos River/Canyons Complex would enhance the preservation of cultural resources by reducing surface disturbance.

VRM Class I designations would effectively prohibit surface disturbance on 2,240 acres in this alternative. In addition, the restrictions and closures proposed for the Guadalupe Escarpment scenic area will provide some additional protection for cultural resources through surface disturbance restrictions.

The impacts of the restricted surface disturbance stipulations are the same as for Alternative A except that the total area affected by these stipulations increases to a total of 54,093 acres. New areas where cultural values are specifically affected are Bear Grass Draw and Maroon Cliffs. The definition of restricted surface disturbance is presented in Alternative A.

Under Alternative B, four additional areas would be designated CRMAs. They are the Potash Bull Wheel, the Poco site, Bear Grass Draw, and the Pecos River/Canyons Complex. These designations would enhance the protective management of these areas.

Implementation of Alternative B would require considerable expansion of the cultural resources program in order to effectively address the direct and indirect impacts of resource development as required by Federal law and BLM policy. The expansion of the cultural resource program would be directly proporational to the increase in resource production for the minerals program.

Summary

Under Alternative B, 0.7 percent of the CRA is accorded some form of protective management; therefore, the overall impact to cultural resources would be unchanged from Alternative B for the most part. The additional acreages proposed for SMAs with special protective stipulations would enhance preservation of cultural resources. The removal of NSO stipulations from Laguna Plata and Maroon Cliffs and downgrading the ORV closure at Laguna Plata to a limited designation would diminish the protective management for these cultural SMAs. The impacts of access and ORV management remain unchanged from Alternative A. Implementation of Alternative B would require a proportionate increase in the Cultural Resources program in order to meet the requirements of Federal law and BLM policy.

Paleontological Resources

Designation of Dry Cave as a 420-acre RNA, the cave would remain gated and entry restricted to authorized research and education. The size of the RNA would allow for continued exploration of cave passages while ensuring sufficient protection of the cave from adverse impacts.

Rights-of-way

Avoidance Areas

The establishment of 15,878 acres (0.7 percent of CRA) of right-of-way avoid- ance areas would impact right-of-way routes. This would increase costs for some rights-of-way by requiring longer routes around avoidance areas. Rights-of-way avoidance areas correspond to SMAs (see Appendix E).

ACCESS

Access impacts would be similar to those discussed for Alternative A except that access to public lands would be restricted in 19 tracts, which would complement, resource management objectives in SMAs totalling 54,058 acres.

SOCIAL AND ECONOMIC CONDITIONS

Assuming 110,000 acres of Federal lands were sold to private parties the private ownership in the CRA would increase approximately 1.5 percent. Based on a conservative estimate of fair market value. These lands are valued at approximately $11 million. Sale of these lands into private ownership would provide tax revenues of approximately $2500. PILT within the CRA would not be significantly impacted.

In general, the impacts to the oil and gas industry in this alternative are insignificant. Although, in general, the impacts are insignificant, operator inconvenience and additional drilling costs would occur in a few SMAs.

Changes in employment, employee earnings, and total ranch income would continue to respond to factors other than BLM actions and would not change due to BLM actions.

In the long term, the BLM would expend $1.6 million for rangeland improvements and vegetation which would increase the preference from approximately 19,200 AUMs to approximately 232,000 AUMs. The increase in AUMs would provide increased opportunities for employment.

TABLE 4-4

PERSONAL INCOME AND EMPLOYMENT, 1984

Industry	No. of Jobs	Percent 1/ Change	Income($)	Percent 1/ Change
BLM Permitted Livestock	180	13.9	546,195	13.04
Related Livestock	650	0.10	2,684,009	0.08
Other Industries	35,501	0.01	409,757,901	0.02
Total	36,331	0.07	412,988,105	0.02

Source: BLM Input/Output Model.

1/ Change from Alternative A.

If the increase in the opportunities for employment were fully realized, personal income within the CRA in the long-term is estimated to increase by approximately $288,000 for the livestock related industry and other industries together. Returns to operators would increase an estimated 57.2 percent if ranchers would increase the size of their operations to take 100 percent advantage of the additional AUMs (see Table 4-5).

TABLE 4-5

LONG-TERM ESTIMATED RECEIPTS, COSTS,
AND RETURNS FOR 129 RANCH OPERATIONS
IN THE CARLSBAD RESOURCE AREA, 1984

Item	Alternative B $	% Change from Alternative A
Gross Income	5,647,824.11	13.3
Cash Costs	3,608,164.72	9.8
Returns Above Cash Costs	2,039,659.39	20.1
Depreciation	1,099,258.94	-0-
Returns to Operation, Labor, Management, and Capital	940,400.45	57.2

Source: BLM files.

See Appendix G for estimated costs and returns of each ranch size category.

ALTERNATIVE C

The objective of this alternative is to balance resource utilization with conservation. It is intended to resolve competing or conflicting land uses to promote sustained productivity and multiple use.

LAND TENURE

There are 220,700 acres of public lands proposed for disposal in Alternative C. Priority disposals would be in east Lea County, southwest Chaves County, and the Hart Canyon, lower Black River, and the Hope areas of Eddy County. Acquisition of 1,080 acres of private land in the Blue Spring ACEC, the Chosa Draw ACEC, and the Pecos River/Canyons Complex ACEC is proposed in this Alternative. An estimated 2,120 acres of State land is proposed for acquisition in the Maroon Cliffs, Laguna Plata, and Pecos River/Canyons Complex SMAs. See Table 4-6 for the impacts associated with land acquisition.

MINERALS AND ENERGY

Oil and Gas

Oil and gas leases would be impacted by NSO stipulations in 23 SMAs totalling 44,007 acres. Impacts to mineral development within these areas would be similar to those described in Alternative B, but would apply to seven additional SMAs covering an additional 30,691 acres.

Cave avoidance, special surface, and floodplain protection stipulations would also have significant adverse impacts on some leases; however, this would not appreciably reduce overall oil and gas availability or production on a CRA-wide basis.

The designation of areas as limited to ORV use, closed to ORV use, limited surface disturbance, and NSO could have a significant impact on mineral and development, primarily because the proposed locations of many of these designations are in areas of moderate to high mineral potential.

Parcels of land in McKittrick Hill Caves Complex, Fence Canyon Caves Complex, Little Manhole/Big Manhole Caves, Yellowjacket/Lair Caves, Dark Canyon, Laguna Plata, Maroon Cliffs, Pecos River/Canyon Complex, Guadalupe Escarpment Scenic Area, and Pecos River Corridor are categorized as areas of high potential. Several areas of 50 acres or less fall under areas of high potential, but would not be significantly impacted by NSO stipulations.

Table 4-6
IMPACTS FROM ACQUISITION

Positive	Negative
Improves resource values of existing public land.	Can displace existing authorized users if their use conflicts with management plans for the area.
Can provide improved public access to important resource values.	Removes land from the property tax base.
Improves manageability of existing public land by eliminating private inholdings with potential for conflicting uses.	Substantial costs in processing cases.
Creates more manageable land ownership patterns.	
Improved manageability can decrease administrative costs.	

Leasable Solid Minerals

Potash

Alternative C would increase the acreage under NSO stipulations by 43,976 acres and maintain the NSO on Maroon Cliffs and Laguna Plata. This returns the situation at Maroon Cliffs and Laguna Plata to that described in Alternative A, with planning objectives conflicting with the existing lease situation and legal constraints. There would be less acreage outside the Known Potash Leasing Area available for potash prospecting because of the increase in NSO areas. The probability that there are potash reserves in these areas is very small and the increase would have negligible impacts on potash development.

Other Leasable Solid Minerals

The area available for solid leasable minerals prospecting will be decreased by 43,976 acres. Most of the SMAs are small enough that exploration can take place around the area. A deposit found on the edge of an SMA could not be solution mined for salt or Frasch mined for sulphur from outside the area. No data is available which indicates minable deposits exist under SMAs so the tonnage of minerals may be foregone cannot be determined.

Salable Minerals

Less caliche, sand and gravel, and building stone would be available but quantity is difficult to project. The major impact would be when drilling occurs at a long distance from open caliche pits, because excessive hauling charges would be incurred for material for oil field construction.

Locatable Minerals

More areas would be closed to prospecting. It is assumed that the unknown deposits are insignificant in quality and quantity and that impacts would be minimal.

Summary

Special stipulations imposed on the minerals programs would cause adverse impacts. NSO stipulations acreage would increase substantially, requiring directional drilling or total elimination of some shallow wells, especially in areas of high potential. Other solid leasables are sodium and sulphur. Sodium would not be impacted, however, sulphur exploration would be reduced in the Yeso Hills SMA. Salables in general would be impacted adversely since locations are in excess of 2 miles. Locatables would not be adversely impacted since they could be obtained outside areas of concern.

RANGELAND RESOURCES

Soil and Water

The impact to soil and water by restricting drilling and not allowing oil and gas storage and production facilities within 100-year floodplains is difficult to quantify since development in the floodplain is avoided according to existing policy.

The proposed restrictions could be applied more definitively to the 100-year floodplain. There are about 7,300 acres of 100-year floodplians, including the Pecos River floodplain, in the CRA.

Adverse impacts due to spills or discharges from storage and production facilities would be reduced by this alternative. Technology exists for reducing the probability of spills or discharges from drilling facilities, although accidents are possible. Surface disturbance caused by construction of drilling pads and roads would still occur if there were no reasonable alternative to drilling in the floodplain. Requiring predisposal storage of salt water in the reef and back reef area west of the Pecos River would reduce loss of soil fertility and the possiblity of surface and groundwater quality deterioration in this area. This could occur due to spills or leaks from pits.

Acreage, in addition to that proposed in Alternative B, would be protected from surface disturbance to the lack of solid mineral activity. Approximately 440 acres around Blue Spring would be protected from the adverse impacts of sulphur exploration, as would additional acreage around Blue Spring and Ben Slaughter Draw Spring. (Table 2-13). About 950 acres of highly erodable soils in Yeso Hills would be protected from surface exploration disturbance related to sulphur exploration.

Although the probability for surface disturbance due to mining claim activity is low, it has occurred in the past. Withdrawing acreage, in addition to that proposed for Alternative B, would reduce the potential for erosion or sedimentation problems. The springs riparian habitat would be protected against increased sedimentation due to the lack of mining claim activity under Alternative C. The proposed Yeso Hills RNA (640 acres) would also be protected by the designation.

Additional acreage would be restricted from surface disturbing activities which would reduce erosion and sedimentation. An additional 13,990 acres would be closed or limited to ORV use, which would further reduce adverse impacts to soils. A second spring at Owl Draw would be protected from disturbance under this alternative. Areas where public access is acquired would be opened to ORV use and potential adverse impacts. Designating Rights-of-Way avoidance areas could allow for greater avoidance of fragile erodable soils and surface water.

Acquisition of land in the Pecos River Complex would allow for increased protection of fragile soils. Acquisition of land around Blue Spring would provide opportunities to ensure the spring's water quality. There would be less opportunity in this alternative to increase cover by vegetative treatments and, consequently, reduce soil loss. Increasing no grazing buffer areas around springs and acquiring Blue Springs, which would also be designated no grazing, would improve water quality at these locations.

Summary

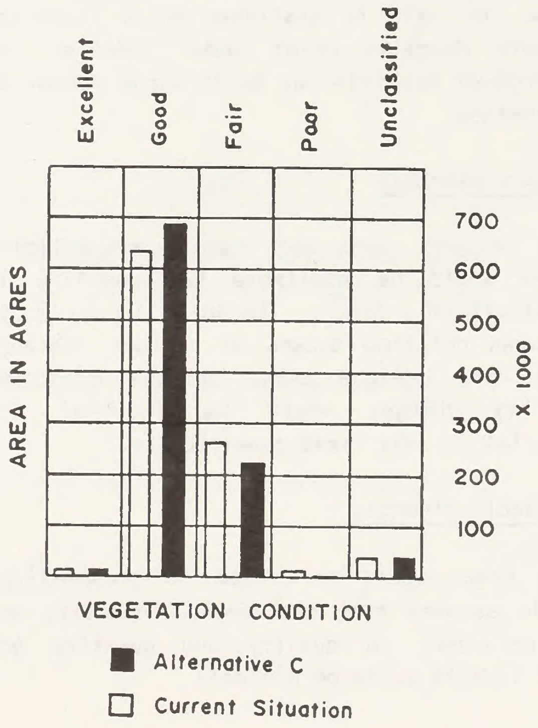
Long-term loss of soil productivity, increasing erosion, and sedimentation, would continue over much of the CRA as a result of mineral activity in both the short- and long-terms. However, most areas with fragile or erodable soils and sensitive water would be protected from adverse impacts due to mineral development and grazing in both the short- and long-terms.

Vegetation

Fewer rangeland improvements and treatments would be needed to implement management actions and would have positive impacts to vegetation similar to those listed under Alternative B. However, fewer sites would be converted from poor to fair condition and from fair to good condition.

Figure 4-3 projects the expected changes in vegetation condition in the long term (20 years). To summarize vegetation condition would improve to 13,000 acres in excellent condition, 689,000 acres in good condition, 220,000 acres in fair condition, and 1,000 acres in poor condition.

Figure 4-3. Acres of Condition Classes



Summary

In the long-term, the overall types and productivity of forage species produced on public lands would improve under this alternative.

Livestock Grazing

Under this alternative, an initial reduction of 24,859 AUMs is proposed on intensively managed allotments, which would result in a decrease of 12 percent of the current active preference. These initial adjustments are needed to help achieve the management actions developed for each allotment in the I Category (see Appendix D-2). Appendix D-6 displays the recommended changes in AUMs for all allotments under Alternative C.

In the long term, 225,458 AUMs would be available for livestock use (or an increase of 15 percent of the 5-year actual use). This projected increase of livestock forage is dependent on implementing grazing systems, installing rangeland improvements, and establishing vegetation treatments to increase forage productivity, improve distribution patterns, and convert potentially suitable sites to suitable sites.

Many of the projected vegetation improvements would lead to improved livestock distribution and the increased production of more, better quality livestock forage, which would have beneficial effects on livestock production.

The impacts to each livestock operator would vary according to how grazing use in the allotment fits into the total ranch operation.

Summary

Short-term impacts to livestock grazing are mitigated by the nonuse that has typically occurred; however, there would be losses to livestock operators due to lowered ranch values. In the long term, livestock operators should realize significant increases in livestock production.

Wildlife Habitat

Implementing CMPs for all allotments in the long term would slightly improve terrestrial wildlife habitat condition. This would include 336,500 acres of HMPs plus those special management areas discussed under Alternative B. Mule deer populations would increase to 9,500 and pronghorn numbers would moderately increase to 350 in the long term. Overall pseudoriparian and riparian habitat conditions would also improve significantly. This alternative increases ecological trends and diversity (from primary to climax) which supports high levels of species richness.

SMAs of 592,000 acres would be implemented with special stipulations. This would improve sensitive habitat conditions significantly over the long term.

T&E species habitat (2,000 acres) would improve significantly in the short and long terms. Protective areas would be increased to buffer indirect impacts of surface disturbance upon T&E habitat.

NSO acreage (44,007) would moderately improve habitat conditions in the short term and significantly improve habitat condition in the long term. Special surface disturbance restrictions covering 597,068 acres would also improve general habitat conditions significantly in the long term. These restrictions would reduce soil and vegetation removal or destruction and allow active management to improve habitat conditions.

Seasonal restrictions described under Alternative B would protect the raptors and herons during nesting seasons.

Solid mineral prospecting and extraction would have similar impacts upon habitat condition as described in Alternative B. Establishing a 640-acre RNA would protect ecosystems in gypsum (Castile formation) communities for research.

Livestock exclusion from 5,549 acres and adjustments in stocking rates through CMPs would slightly improve habitat conditions in the short- and long-terms. Improvements would primarily be to habitat quality. Forage would be available to wildlife, water development would be initiated or improved, rangelands would be managed to improve ecological trends, and pseudoriparian habitat management would improve wildlife browse palatability and abundance.

Riparian and aquatic habitat condition would improve significantly as described in Alternative B.

Summary

Overall habitat condition would improve slightly. Sensitive, pseudoriparian, and riparian habitats would improve significantly. Additional surveys and restrictive stipulations would protect and significantly improve T&E habitat conditions. Wildlife numbers and diversity would increase ecological succession CRA wide.

Riparian and aquatic habitat condition would improve significantly as described in Alternative B. Acquisition of surface acreage at Blue Springs would also protect and enhance aquatic habitat for the T&E fish species.

A balance of habitat protection and significant improvement in riparian, aquatic, pseudoriparian, T&E, and sensitive habitat areas would occur. Generally, the quality of habitat would significantly improve, especially vegetation, thereby improving habitat for wildlife. This alternative would improve ecological trends and wildlife species richness.

SPECIAL MANAGEMENT AREAS

Areas of Critical Environmental Concern

Impacts affecting the six potential ACECs are addressed under other sections of this alternative, including Soil and Water, Terrestrial Wildlife Habitat, Aquatic Habitat, Cave Resources, Visual Resources, and Cultural Resources.

Fire Management

Impacts would be similar to those discussed in Alternative B.

Recreation

Effects of land tenure adjustments would be the same as in Alternative A. Acquiring lands at Blue Springs and Chosa Draw Caves Complex would enhance opportunities for environmental interpretation and education.

Long-term adverse impacts on the diversity of recreation opportunity settings would occur in most of the CRA. This would result from the gradual decrease of semiprimitive nonmotorized and semiprimitive motorized recreation opportunities. This is caused primarily by continued development of minerals and rights-of-way. In some cases, increased road development would allow access to public land previously unavailable for dispersed recreational uses. This may create a positive impact by allowing for increased semiprimitive nonmotorized recreation opportunities and semiprimitive motorized recreation opportunities.

Management prescriptions (see Appendix E) for the Pecos River Corridor SRMA would help ensure retention of important water based recreation activities. This would result from NSO stipulations, a more restrictive floodplain stipulation, a limited ORV designation, and closure to salable minerals.

The establishment of other SMAs with important or high demand recreation opportunities would be the same as for Alternative B, except for an additional 750 acres in the Lonesome Ridge ONA/ACEC (2,990 acres) and 1,530 acres in the Cave Resource SRMA (5,990 acres). Including the Pecos River Corridor SRMA and the 3,950-acre Dark Canyon ACEC, about 2,990 acres of semiprimitive nonmotorized recreation opportunities would be protected, as would 28,120 acres of semiprimitive motorized recreation opportunities.

In particular, the quality of recreation opportunities is greatly enhanced by the addition of 1,480 acres for the McKittrick

Hill Caves Complex, 1,480 acres for the Chosa Draw Caves Complex, and 750 acres for the Lonesome Ridge ONA/ACEC. Restrictions on minerals development within zone I of the Guadalupe Escarpment Scenic Area would be a moderate positive impact by providing long-term retention of semiprimitive motorized recreation opportunities in this 8,820-acre area.

Increasing intensive management with specific management prescriptions within individual SMAs (see Appendix E) provides for adequate maintenance of the special recreation opportunities as they currently exist.

The establishment of rights-of-way avoidance areas would provide adequate protection of special recreation values in 12 areas covering 16,260 acres.

Acquiring access in the Lonesome Ridge and Dark Canyon SMAs would enhance important recreation opportunities.

Summary

Overall, this alternative would provide adequate protection of diverse recreation opportunities and allows for desired recreation experiences for the majority of users. Increased access would open nearly all of the CRA to dispersed recreational use and allow ingress and egress for certain SMAs possessing important recreation values. Increased intensive management of certain SMAs proposed for Alternative C would greatly enhance the quality of recreation opportunities.

Off-Road Vehicles

Impacts on recreational ORV use under Alternative C would be the same as for Alternative B except for an additional 4,513 acres of public land "closed" to ORV use and an overall increase of 29,330 acres of public land with "limited" ORV designation. These increases (three SMAs "closed" and 11 "limited") would further restrict ORV use in these areas. However, none of these areas receive significant recreational ORV use or have significant potential. Therefore, there should be little overall adverse impacts on recreational ORV use.

The impacts of establishing the Hackberry Lake and Alkali Lake Intensive ORV Use Areas are the same as discussed in Alternative B.

Summary

Impacts on ORV use would be similar to Alternative B with slight further reduction in ORV use due to additional ORV closures and limitations.

Cave Resources

Alternative C would provide significantly greater protection to cave resources by prohibiting oil and gas drilling from within a minimum of 450 feet of significant cave features in the 387,000-acre cave resource primary occurrence zone. Sensitive values of known caves would be protected from development of solid leasable minerals. For the intensively managed caves, the Cave Resource SRMA would increase by 1,530 acres. The protective measures would prevent direct degradation of the important cave resources from mineral extraction and other surface disturbing activities. See Appendix E for acreage impacted by the actions. It would also retain some buffer areas around the major recreational caves, particularly at McKittrick Hill, to enhance the overall recreation experience, camping, picnicking, sightseeing, etc., associated with caving in these predominantly semiprimitive motorized recreation opportunity settings.

Acquisition of 480 acres of private land and 40 acres of mineral estate in the Chosa Draw Caves Complex ACEC would consolidate management for the complex ecosystem associated with the gypsum cave complex. Consolidating ownership of these active hydrologic caves along with the extensive Parks Ranch Cave system would ensure adequate protection of the significant hydrologic, biologic, and geologic cave resources within this area.

Increasing the size of the Lonesome Ridge ONA to 2,990 acres with associated protective management would prohibit drilling on the ridge tops and thus provide significantly greater protection to the cave resources in this area.

Cumulatively, the additional protective actions proposed in this alternative would have significant positive benefits to the important cave resources throughout the CRA.

Summary

Alternative C would provide significantly greater protection to cave resources by prohibiting oil and gas development within a minimum of 450 feet of significant cave/karst features and provide adequate protective management for intensively managed caves. Acquisition of private land in the Chosa Draw Caves Complex ACEC would provide protection of a complex gypsum cave ecosystem.

Visual Resources

Establishing VRM class objectives for the undesignated portion of the CRA (965,000 acres) would reduce potentially excessive visual intrusions in landscapes with high scenic quality or high visual sensitivity. Also, similar to Alternative B, some VRM classes shown on Map 3-6 were reclassified in some SMAs to resolve conflicts between minerals development, visual resources, and other resources. Changing visual classes was done to facilitate management objectives of certain SMAs.

Scenic quality and visual sensitivity are emphasized in the Lonesome Ridge ONA/ACEC (2,990 acres), Dark Canyon ACEC (3,950 acres), Pecos River/ Canyons Complex ACEC (5,190 acres), most of the management units of the Cave Resource SRMA (5,990 acres), and the Guadalupe Escarpment Scenic Area (49,570 acres). The quality of recreation experiences would improve for most areas. Increased acreage (750 acres) for VRM Class I objectives for Lonesome Ridge ONA/ ACEC and increased acreage (1,530 acres) for VRM Class II objectives for the Cave Resource SRMA, 1,200 acres for the Pecos River/Canyons Complex ACEC, and for Zone 1 (8,820 acres) of the Guadalupe Escarpment Scenic Area would greatly enhance the retention of relatively undisturbed landscapes with high visual qualities. Only low levels of visual contrast would be allowed by any surface disturbing activities.

Zone 2 (40,750 acres) of the Guadalupe Escarpment Scenic Area would be managed under VRM Class III objectives. This would permit moderate modification of the characteristic landscape of this visually sensitive area by allowing moderate visual contrasts to occur, particularly as a result of probable minerals and rights-of-way development in this area.

SMA which restrict or prohibit minerals development would have high positive impact for the visual resources by reducing the degree of moderate to high adverse visual contrasts on the existing landscape of these areas. Continued minerals development and associated rights-of-way development throughout the remainder of the CRA would result in continued long-term moderate to high visual contrasts on the characteristic landscape.

Stipulations of no oil and gas production facilities within the 100-year floodplain would be a moderate positive impact to visual resources along the Pecos River and other major drainages. This action would result in negligible change to visual resources elsewhere in the CRA where resource development activities occur.

Impacts from vegetation treatments and other rangeland improvements would be the same as Alternative B, except a reduction of 128,000 acres in vegetation treatments would moderately reduce short-term adverse impacts on visual quality.

Important visual resources would be protected by establishing 16 rights-of-way avoidance areas totalling 21,800 acres. This would be a high positive impact for higher scenic quality or sensitive visual resources within these areas.

Summary

Impacts to designation of VRM class objectives for public lands west of the Pecos River are similar to those for Alternative B. Increased acreage of upgraded VRM class objectives within certain SMAs would significantly reduce adverse impacts to visual resources of these areas. Upgrading the VRM class in Zone I of the Guadalupe Escarpment Scenic Area SMA and other resource development restrictions of the area would increase protection of sensitive visual values. However, Zone 2 of this SMA would still be subject to moderate visual change. Changes in the characteristic landscape throughout the CRA would remain consistent with designated VRM class objectives.

Cultural Resources

In this alternative some specific land acquisitions are proposed which would affect cultural resources. The protective management of cultural resources in Laguna Plata, the Pecos River/Canyons Complex, Chosa Draw, and Blue Spring would be enhanced by the acquisition of State and private land.

The impacts of NSO are analyzed in Alternative A. In Alternative C, NSO stipulations would be applied to all of the Laguna Plata Archaeological District, 1,880 acres at Maroon Cliffs, and the Pecos River/Canyons Complex; an action which greatly enhances the protective management of the cultural resources in these areas.

The impacts of closure to solids leasing are analyzed in Alternatives A. In alternative C, an additional 10,065 acres would be affected by this action.

The impacts of withdrawing areas from locatable mineral exploitation are analyzed in Alternative A. The impacts in Alternative C are the same except that and additional 11,009 acres would be affected.

The impacts of closure to mineral materials sales on cultural resources are analyzed in Alternative A. The impacts under Alternative C would be the same except that an additional 30,275 acres would be affected.

The impacts of SMAs on cultural resources are analyzed in Alternative A. The impacts under Alternative C would be the same except that an additional 450,720 acres would be affected.

The impacts of fire management on cultural resources are analyzed in Alternative A. The impacts in Alternative C would be the same, except that an additional 952,302 acres would be managed by modified fire suppression techniques.

The impacts of the "restricted surface disturbance" stipulation on cultural resources are analyzed in Alternatives A and B. The impacts in Alternative C would be the same, except that the "restricted surface disturbance" stipulation, as defined in Alternative A for Laguna Plata, would be applied to the Poco Site and 1,780 acres in Bear Grass Draw.

The general impacts of ORV designations are analyzed in Alternative A. ORV limited designations would be applied to 1,780 acres in Bear Grass Draw and an ORV-closed designation would be applied to 3,360 acres in Laguna Plata. Both of these designations would considerably enhance protective management of the cultural resources in these areas.

The impacts of cultural resource management areas are analyzed in Alternative B. The impacts on cultural resources in Alternative C would be the same, except that an additional 5,880 acres would be affected.

The impacts of VRM designations are analyzed in Alternative A. There is no change for Alternative C.

The impacts of the access program on cultural resources for Alternative C are the same as for Alternatives A and B.

Implementation of Alternative C would mitigate, to some extent, some of the direct and indirect impacts of resource production. However, it should be noted that the protective management would only be applied to 1.8 percent of the total CRA under this Alternative. Consequently the demand for patrol monitoring would continue to be a primary concern of the cultural resources program. The cultural SMAs would provide opportunities for academic research as well as public education and appreciation of southeastern New Mexico's history and prehistory.

Summary

In Alternative C, the protection accorded cultural resources is enhanced by the protective management of SMAs; however, only 1.8 percent of the total CRA is accorded this protection. This includes increased acreages for NSO, leasing closures for solid and locatable minerals, as well as surface disturbance restrictions. Specifically, NSO stipulations are restored to Laguna Plata, Maroon Cliffs, and proposed for the Pecos River/Canyons Complex, while surface disturbance restrictions are applied to the Poco Site, Maroon Cliffs, and 1,780 acres in Bear Grass Draw. ORV closures and limitations for Laguna Plata, Bear Grass Draw, and the Poco Site would further protect the cultural resources in these areas. The increase in emphasis in protective management would require increases in patrol and monitoring, and would provide opportunities for nonFederally funded research and other forms of public involvement.

Paleontological Resources

The impacts of managing Dry Cave as a 420-acre RNA would be the same as those described under Alternative B.

Rights-of-way

Avoidance Areas

Impacts would be the same as for Alternative B, except a total of 39,991 acres (1.8 percent of the public land in the CRA) would be designated as avoidance areas.

ACCESS

Access would be obtained to allow for increased public use and to meet BLM administrative needs in 6 high priority, 11 moderate, and 8 low priority access tracts. This alternative would result in the greatest resolution of access problems in the CRA, which would reduce user complaints and increase efficiency in managing public lands.

Access restrictions to benefit other resource values in 23 access tracts would occur under this alternative. Access-related impacts would be prevented which would result in the retention of other resource values.

SOCIAL AND ECONOMIC CONDITIONS

The long-term impacts of this alternative would be the same as for Alternative B for the sales or disposal of lands.

In general, the impacts to the oil and gas industry would be slightly higher than in Alternative B but would not be significant.

Specific SMA stipulations would affect operations insignificantly. Increased drilling costs due to directional drilling would exceed $10 million.

The loss of approximately five gas wells and the seasonal drilling stipulations would add to operator inconvenience; but, even when added to the increased drilling costs, would not significantly affect the economy of the CRA.

In the short-term, forage available for livestock would be reduced by 24,859 AUMs. As in Alternative B, this would be a reduction from preference to current 5-year average use. Again, this reduction would decrease permit values and reduce the individual rancher's ability to obtain loans or to sell his ranch. All other components of the social-economic structure would not be affected.

In the long term, BLM would expend approximately $900,000 on rangeland improvements and vegetative treatments which would increase the preference from 192,000 AUMs to 225,000 AUMs. Table 4-7 shows that the increase in AUMs would provide opportunities for employment to increase by approximately 11 percent in the livestock industry while only minor changes, .1 percent and .008 percent, respectively, would occur in the related livestock industry and the other industries.

TABLE 4-7

PERSONAL INCOME AND EMPLOYMENT, 1984

Industry	No. of Jobs	Percent Change From Alter. A	Income $	Percent Change From Alter A
BLM Permitted Livestock	176	11.300	534,909	11.080
Related Livestock	650	0.100	2,683,609	0.070
Other Industries	35,500	0.008	407,065,314	0.007
Total	36,326	0.060	410,283,832	0.02

Source: BLM Input/Output Model.

If the increase in the opportunities for employment were fully realized, personal income within the CRA is estimated to increase by a total of approximately $407 million for the livestock related and other industries together. Returns to operators (livestock sector) are estimated to increase by 32 percent for the ranchers and would increase their operations to take advantage of the additional AUMs (see Table 4-8).

TABLE 4-8

LONG TERM ESTIMATED RECEIPTS, COSTS, AND RETURNS FOR 129 RANCH OPERATIONS IN THE CARLSBAD RESOURCE AREA, 1984.

Item	Alternative C	% Change From Alt. A
Gross Income	5,531,579.87	11.0
Cash Costs	3,642,324.33	10.8
Returns Above Cash Costs	1,889,255.54	11.3
Depreciation	1,099,258.94	-0-
Returns to Operator Labor, Management and Capital	789,966.60	32.0

Source: BLM Files.

See Appendix G for estimated costs and returns for each ranch size category.

ALTERNATIVE D

This alternative emphasizes protection and preservation of sensitive resources such as cultural sites, wildlife habitat, natural ecosystems, and important visual resources. Activity plans would be developed for those areas requiring special management.

LAND TENURE

Same as for Alternative C, except 5,566 acres of State land and 15,520 acres of private land would be authorized for acquisition to support the SMA program.

MINERALS AND ENERGY

Oil and Gas

NSO stipulations would be imposed on an additional 15,520 acres over Appendix C, including all acreage within 100-year floodplains. Impacts to leases within these areas would be similar to Alternative B, but apply to an additional 47,770 acres.

The area open to leasing with special stipulations would increase to 599,120 acres, an increase of 2052 acres from Alternative C. Impacts or these further restrictions would be similar to those in Alternative C.

Parcels of land in McKittrick Hill Caves Complex, Fence Canyon Caves Complex, Little Manhole/Big Manhole Caves, Yellowjacket/Lair Caves, Dark Canyon, Laguna Plata, Maroon Cliffs, Pecos River/Canyon Complex, Guadalupe Escarpment Scenic Area, Pecos River Corridor, and Yeso Hills are categorized as areas of high potential. Several areas of 50 acres or less fall under areas of high potential, but would not be significantly impacted by NSO stipulations.

Leasable Solid Minerals

Potash

The acreage under NSO will increase to 102,596. There will be less acreage in the Known Potash Leasing Area available for potash prospecting. The probability that there are potash reserves in the SMAs closed to leasing is small.

Other Leasable Solid Minerals

The area available for leasable solid minerals prospecting will be decreased by 102,596 acres. Most of the SMAs are small enough that exploration can take place around the area. A deposit found on the edge of an SMA could not be solution or frasch mined from outside the area.

Salable Mineral Materials

Less caliche, sand and gravel, and building stone would be available but quantity is hard to project. The major impact would be if drilling occurs and a long distance from open caliche pits, excessive hauling charges would be incurred for material for oil field construction.

Locatable Minerals

More areas would be closed to prospecting. It is assumed that the unknown deposits are insignificant in quality and quantity and that impacts would be minimal.

Summary

Special stipulations imposed on the minerals programs would cause adverse impacts. NSO stipulations acreage would increase substantially, requiring directional drilling or total elimination of some shallow wells, especially in areas of high potential. Other solid leasables are sodium and sulphur. Sodium would not be impacted, however, sulphur exploration would be reduced in the Yeso Hills SMA. Salables would be impacted generally adversely since locations are located in excess of two miles. Locatables would not be adversely impacted since they could be obtained outside areas of concern.

Soil and Water

Applying oil and gas NSO stipulations to additional acreage in several SMAs would reduce adverse impacts to soils. Most of the erodable soils in the Yeso Hills SMA (5,460 acres) would be protected from increased erosion and sedimentation from oil and gas development, as would additional fragile soils within the Pecos River/Canyon complex. Not allowing oil and gas drilling in about 7,300 acres of 100-year floodplains would reduce erosion, sedimentation, and loss of soil productivity, which would otherwise result from the construction of drill pads and access roads. The possibility of accidents causing water quality contamination would also be reduced. Requiring that tanks be enclosed for any new salt water disposal facilities on the east side would reduce loss of soil fertility and reduce the possiblity of surface and groundwater deterioration.

Restricting sulphur exploration, mineral material excavation, and mining claim activity on additional acreage around the springs riparian areas would increase protection from sedimentation as shown in Tables 2-4, 2-8 and 2-9. The entire proposed Yeso Hills SMA would be protected from increased erosion due to mineral activities, particularly sulphur exploration.

The large acreage with restricted ORV use (323,759 acres) would significantly decrease loss of soil productivity from compaction and erosion. A "limited" designation would be applied to 87,050 acres of gypsum soils south of White's City for protection against ORV use. The designation would reduce ORV destruction of existing sparse vegetation, which would subject these susceptable soils to wind and water erosion. Increased ORV limitations around springs would reduce sedimentation into the springs (see Table 2-11).

Acquiring land at Blue Spring, Pecos River Canyons, and Maroon Cliffs would increase protection of fragile soils. Increasing the no grazing buffer area around two springs would reduce sedimentation.

Summary

Under this alternative, erosion and sedimentation from mineral activity and ORV use would be substantially decreased in the long-term; however, reduced vegetation treatment would allow less opportunity to increase cover and, consequently, reduce erosion and sedimentation.

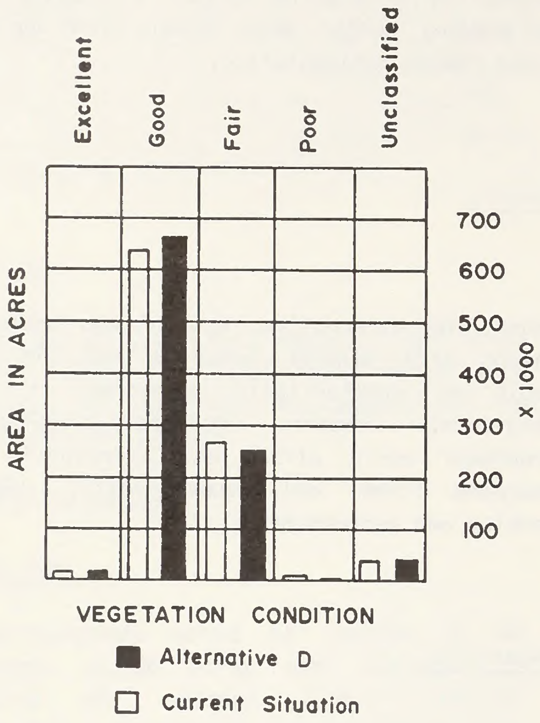
Vegetation

Current utilization trends would continue in the short term until use patterns are changed by grazing systems and facilities.

Figure 4-4 illustrates the expected long-term changes in vegetation condition. Vegetation condition would improve similar to Alternative C to 13,000 acres in excellent condition, 658,000 acres in good condition, 250,000 acres in fair condition, and 2,000 acres in poor condition. Projections are based on the potential of existing vegetation to respond to changes in grazing management and improvements. The major long-term impacts to vegetation would be slight improvements in the type and productivity of forage species on sites that are currently in poor or fair condition. Under intensive management, some sites would be converted from poor to fair condition and from fair to good condition.

Expanded ORV restrictions would have greater short- and long-term positive impacts to vegetation by further limiting surface disturbances.

Figure 4-4. Acres of Condition Class



Summary

In the long-term, the overall type and productivity of forage species on public lands would improve slightly under this alternative.

Livestock Grazing

Under this alternative, the initial proposed reduction of 38,662 AUMs of livestock grazing would result in a decrease of 18 percent of the current active preference. These initial adjustments are needed to help achieve the management actions developed for each allotment in the Category I. Appendix D-6a displays the recommended changes in AUMs for all allotments.

In the long-term, 191,014 AUMs would be available for livestock use, an increase of one percent of the 5-year actual use. This projected increase of livestock forage is dependent on implementing grazing systems, installing rangeland improvements, and establishing vegetation treatments to increase forage productivity, improve distribution patterns, and convert potentially suitable sites to suitable sites.

Summary

Short- and long-term impacts to livestock management are partly mitigated by the nonuse that has typically occurred; however, there would be a significant monetary loss to livestock operators due to lowered livestock production and ranch values in both the short and long-terms.

Wildlife Habitat

Habitat condition would be similar to those discussed in Alternative C. Differences are centered around universal levels of improvement and protection for wildlife habitat. General ecological succession would be slow because of the Chihuahuan Desert influence. Restrictions would protect the habitat while management actions on CMPs, HMPs, CRMPs, and specially designated areas would significantly improve the quality of habitat for wildlife use. Big game populations would increase to levels described in Alternative C.

Federal and State T&E species and habitat would be fully protected. Habitat conditions and populations would significantly improve through full implementation of recovery plans, detailed surveys, and protection for potential candidate species. Providing additional buffers for known T&E species would also improve habitat conditions.

All surface disturbing actions would be scrutinized on an individual basis and restricted, as necessary, on 600,000 acres depending on the protection necessary for the resource. NSO restrictions (50,500 acres) would also protect and improve habitat conditions significantly.

Intensively managing a minimum of 52,000 acres of pseudoriparian and riparian habitat with restrictions on surface disturbance activity would significantly improve terrestrial wildlife habitat.

Range habitat conditions would generally increase slightly, but ecological succession would be improved through CMPs. This would significantly enhance habitat condition for wildlife.

Summary

Habitat conditions for wildlife would increase slightly. Rangeland, T&E, pseudoriparian, riparian, and sensitive habitat conditions would greatly increase. Overall habitat quality would improve significantly due to improved ecological succession of vegetation.

Perennial and ephemeral water sources on, or adjacent to, BLM lands would improve at a corresponding level to terrestrial habitat improvements in the long term. Pseudoriparian and riparian habitat improvements would significantly improve aquatic systems in the short term. In turn, successional aquatic populations would improve in health and numbers.

SPECIAL MANAGEMENT AREAS

Areas of Critical Environmental Concern

Impacts affecting the six potential ACECs are addressed in other sections of this alternative, including Soil and Water, Wildlife Habitat, Cave Resources, Visual Resources, and Cultural Resources.

Fire Management

Impacts would be similar to those discussed in Alternative B.

Recreation

The impacts on recreation opportunities caused by the retention and disposal of public lands would be the same as identified under Alternative B. The impacts of acquiring private lands around Blue Springs ACEC and Chosa Draw Caves Complex ACEC would be similar to that discussed in Alternative C, except that increasing the Chosa Draw Caves Complex ACEC by an additional 160 acres of public land and acquiring 120 acres of private land and 640 acres of state land and minerals would help maximize protection of the unique gypsum cave ecosystem. This would create considerable environmental education opportunities and improve the desired recreation experiences for most users in these areas.

Overall, impacts on dispersed recreation opportunities caused by minerals development and associated rights-of-way development would be the same as identified in Alternative C. In addition, restricting all vehicular activity to designated routes through ORV limited designations on 87,050 acres of fragile gypsum soils could help to retain the amount of semiprimitive motorized recreation opportunities in this area by preventing road or trail development caused by geophysical operations or other off-road use.

Impacts on those SMAs established with important or high demand recreation opportunities would be nearly the same as for Alternative C. Increasing, by 20 acres, the size of the Fence Canyon Caves Complex and applying protective measures restricting minerals and ORV use would enhance protection of one cave by providing a greater buffer area around it. This would result in some enhancement of the recreation opportunities in this area.

An increase of 3,410 acres of rights-of-way avoidance areas would greatly enhance the retention of certain important predominantly semiprimitive motorized recreation opportunities in the affected areas. These include an increase from 5,380 acres to 8,080 acres in intensively managed cave areas. This includes the Cave Resource Special Recreation Management Area, Chosa Draw Caves Complex ACEC, and Honest Injun Cave Cultural Resource Management Area. The addition of rights-of-way avoidance areas within zone I (8,820 acres) of the Guadalupe Escarpment Scenic Area SMA would help ensure maintenance of existing semiprimitive nonmotorized and semiprimitive motorized recreation opportunities in this area.

The impacts of access acquisition in the Lonesome Ridge ONA/ACEC and the Dark Canyon

ACEC are the same as for Alternative C. The impacts to recreation opportunities from not acquiring access to several large tracts of public land would be the same as for Alternatives A and B.

Summary

Overall, the impacts to recreation would be similar to those described in Alternatives C. Some minimal increase in SMA acreage, with increased protective management, would slightly enhance recreation opportunities by further restrictions on surface disturbing activities. Lack of access to several large tracts of public land would prevent recreational use of these areas. Semiprimitive motorized and semiprimitive nonmotorized recreational opportunities would generally be maintained for SMAs with high value recreation opportunities.

Off-Road Vehicles

The areas designated closed to ORV use in this alternative would be basically the same as for Alternative C with an insignificant increase of 22 acres around two springs. The area under "limited" designation, however, would significantly increase from 79,389 acres in Alternative C to 323,759 acres in Alternative D. This increase, resulting from restrictions to designated routes and/or seasonal limitations, predominantly falls within the Los Medanos Raptor Area, San Simon Pronghorn Habitat, Phantom Banks Heronries Habitat, and the Guadalupe Escarpment Scenic Area SMAs as well as the Southern Gypsum Soil Area. While protecting wildlife resources, scenic values, and fragile soils, this additional 244,370 acres of ORV limitation would have a moderate impact on ORV recreationists in the affected areas. Although access within these areas would still be ensured along designated access routes for hunting and other uses, ORV recreation would have to be conducted on the remaining 1,847,091 acres of public land. Because the most popular ORV use areas would still be designated "open," overall impacts on ORV use would be expected to be only slight in the Resource Area.

Summary

Although there would be a significant increase in "limited" ORV designations under this alternative, the most popular ORV use areas would still be designated open so there would be only a slight negative impact on ORV recreational use opportunities within the Resource Area.

Cave Resources

Overall, impacts to cave resources under Alternative D would be similar to those for Alternative C, with the following differences: Prohibiting oil and gas drilling within a minimum of 600 feet of cave features would further protect fragile cave resources and lessen the chance of drilling through unknown or unsurveyed sections of caves. Although there would be some minor increased protection (20 acres) of the Fence Canyon Caves Complex from Alternative C, the only significant added protection would be for the Chosa Draw Caves Complex ACEC. Added protection would consist of increasing the acreages on NSO and other protective stipulations already applied to this area (see Appendix E). These added protective measures would increase the buffer around the caves, moderately reduce impacts from erosion and potential water contamination, while enhancing the overall recreation experience by minimizing visual intrusions and contamination of the cave environment.

Summary

Impacts on cave resources would be similar to those for Alternative C. However, prohibiting oil and gas drilling a minimum of 600 feet from significant cave/karst features would further protect cave resources within the cave resource primary occurence zone. Also, increased protection of the Chosa Draw Caves Complex ACEC would increase the protective buffer around the caves minimizing potential contamination of the gypsum caves, minimizing visual intrusions and enhancing the recreation experience.

Visual Resources

Impacts of land and mineral estate acquisitions in the Pecos River/Canyons Complex SMA ACEC would be the same as discussed in Alternative C. In addition, the acquisition of 1,280 acres of state land and minerals estate in zone 1 of Dark Canyon ACEC, would provide protection of high scenic quality visual resources and consolidate lands for improved management of this SMA.

Establishing VRM class objectives would have similar positive impacts as identified in Alternatives B and C. Designating an additional 20 acres of VRM class II in the Fence Canyon Caves Complex would be a slight positive impact for this area by protecting sensitive visual recources around a popular recreational cave. An upgrade of 1,090 acres to VRM class II in the Pecos River/Canyons Complex ACEC returns this to the original class II acreage identified under Alternative A. This would have a significant positive impact by providing visual integrity of an existing natural landscape which possesses high scenic values.

The impacts by vegetation treatments and other rangeland improvements would be the same as for Alternative B, except that reducing vegetation treatments by 157,000 acres would moderately reduce short-term adverse visual impacts.

The seasonal drilling restriction in zone 2 of Dark Canyon ACEC, would be the same as discussed in Alternatives B and C.

Important visual resources would be further protected by establishing 17 rights-of-way avoidance areas, totaling 41,810 acres. Right-of-way avoidance areas would have positive impacts on visual values within these areas by eliminating the visual contrasts created by most right-of-way facilities.

Summary

Impacts would be similar as for Alternative C, with a slight overall improvement in scenic quality from increases in SMA acreage and rights-of-way avoidance areas, and a decrease in vegetation treatments.

Cultural Resources

The acquisition of State and private lands for the Maroon Cliffs SMA, State lands for the Laguna Plata SMA, and additional acreage for the Pecos River Canyon Complex SMA would significantly increase BLM's ability to effectively manage the cultural resources within these SMAs.

The direct and indirect impacts of oil and gas leasing are the same as for Alternative A, except that an additional 16,095 acres would be placed under NSO.

The direct and indirect impacts of solids leasing are the same as for Alternative A except that an additional 9,630 acres would be closed to solids leasing.

The direct and indirect impacts of locatable mineral leasing withdrawals are the same as in Alternative A, except that an additional 11,468 acres are impacted.

The impacts of closures to mineral material sales are the same as for Alternative A, except that an additional 6,143 acres would be affected.

The impacts of SMAs are discussed in Alternative A. The impacts on cultural resources in Alternative D are the same, except that an additional 4,470 acres would be affected.

The impacts of full and modified fire suppression techniques are discussed in Alternative A. The impacts of modified fire management in Alternative D would be the same, except that a total of 893,415 acres would be impacted.

The impacts of the restricted surface disturbance stipulation are discussed in Alternatives A through C. The impacts in Alternative D are the same except that an additional 5,433 acres would be affected. The increase from 1,780 acres to 3,040 acres for the Bear Grass Draw SMA would significantly improve the protective management of the cultural resources in this area. The impacts of this action are discussed in Alternative C.

The impacts of ORV designations are discussed in Alternatives A through C. The impacts in Alternative D would be the same for cultural resources except that the ORV-limited designation for the Bear Grass Draw cultural SMA would be increased from 1,780 acres to 3,040 acres.

The impacts of designating cultural resource SMAs are the same as for Alternative C, except that the National Register Historic Places nomination of 3,040 acres in Bear Grass Draw and 1,740 acres in the Pecos River/Canyons complex would significantly enhance the protective management of the cultural resources in these areas.

The impacts of access on cultural resources is analyzed in Alternative A.

Implementaion of Alternative D would provide considerable protection for cultural resources in designated areas. Under this alternative, 2.8 percent of the CRA would will be afforded some form of protection or consideration of surface disturbance. Consequently, the needs for patrol and monitoring are just as important as previous alternatives. The opportunities for education and public involvement are unchanged from Alternative C.

Summary

The overall impacts of Alternative D on cultural resources is decreased from Alternative A. The additional protection accorded SMAs would provide increased protection for cultural resources within the SMAs. Land acquisitions for Maroon Cliffs and the Pecos River/Canyons Complex would further protect the cultural resources in these areas.

The needs for patrol and monitoring as well as the opportunities for education and public involvement are unchanged from Alternative C.

Paleontological Resources

The impacts of managing Dry Cave as a 420 acre RNA would be the same as identified in Alternatives B and C.

Rights-of-Way

Avoidance Areas

Same as Alternative C, except that the total acreage of avoidance areas is 57,598.

ACCESS

Adequate access would be obtained in four tracts to allow public use and BLM administration of SMAs, which would reduce user complaints and increase efficiency in managing public lands.

The access restrictions, implemented to benefit other resource values, would be applied within 32 access land tracts.

SOCIAL AND ECONOMIC CONDITIONS

The land tenure program for this alternative is the same as Alternative C. Even though this alternative projects the acquisition of approximately 7,000 acres of land, the economy of the area would not change from Alternative C.

With the exception of SMA #18, the impacts of this alternative are very similar to Alternative C. SMA #18 expands the NSO stipulation from 4,000 acres to 4,870 acres which precludes any development in the area.

Short-term primary impacts of this alternative would be felt by the ranch operators and their hired hands. Secondary impacts would be felt by those employed in the related livestock industries.

In the short term, total herd sizes would be reduced and would vary between ranch operations as follows:

Small Commercial Cow-calf	-0.61
Medium Commercial Cow-calf	+2.02
Large Commercial Cow-calf	+1.29
Small Commercial Sheep/Cow-calf	-14.37
Mediaum Commercial Sheep/Cow-calf	-14.30
Large Commercial Sheep/Cow-calf	-10.26

As livestock adjustments are implemented, income from livestock sales would increase as herd sizes are reduced. This income would be short lived and would rapidly fall due to decreased production. Most ranchers would probably continue to ranch by increasing the efficiency of their operation through increased calving percentages, increased selling weights of livestock, by leasing more expensive private or State land, or by not making full allowance for depreciation. Ranch value would also decrease by $1.3 million.

The decrease in livestock stocking rates decreases job opportunities, decreases personal income, and decreases receipts on ranch operations (see Table 4-9 and 4-10).

In the long term, the amount of grazing authorized and the level of employment would return to current levels. Returns to operators and the input into the regional economy would be at today's level.

TABLE 4-9

PERSONAL INCOME AND EMPLOYMENT, 1984

Industry	No. of Jobs	Percent Change	Income $	Percent Change
BLM Permitted Livestock	152	3.9	460,614	-4.300
Related Livestock	469	-0-	2,680,970	-0.020
Other Industries	35,494	0.008	407,008,844	-0.006
Total	36,115	0.020	410,150,428	0.010

Source: BLM Input/Output Model.

TABLE 4-10

ESTIMATED SHORT-TERM RECEIPTS, COSTS,
AND RETURNS FOR 129 RANCH OPERATIONS
IN THE CARLSBAD RESOURCE AREA, 1984

Items	Alternative C $	% Change From Alter. A
Gross Income	4,766,343.52	-4.3
Cash Costs	3,176,302.01	-3.2
Returns Above Cash Costs	1,590,041.51	-6.3
Depreciation	1,099,658.94	-0-
Returns to Operator Labor, Management, And Capital	490,782.57	-17.9

Source: BLM Files.

See Appendix G for estimated costs and returns for each ranch size category.

ALTERNATIVE D1

This constitutes a No Grazing Alternative. It was developed to analyze the affects of eliminating all domestic livestock from the 174 grazing allotments totalling 965,000 acres west of the Pecos River. All other programs would be managed as described in Alternative D.

The No Grazing Subalternative is analyzed herein to provide essential baseline information to compare against the environmental impacts of all alternatives which involve grazing. This is necessary to permit full and fair consideration of nonlivestock management options.

It is expected that this subalternative would take a minimum of ten years to fully implement because of the extensive fencing involved; therefore, the short term for impact analysis purposes is 20 years, the long term analysis period is 100 years.

MINERALS AND ENERGY RESOURCES

Oil and Gas

The no grazing alternative would result in slight benefits for oil and gas production. Geophysical exploration and road and pad development costs would decrease because of fewer access conflicts or damages to livestock operations.

Leasable Solid Minerals

Potash

Potash leasing would benefit from removing livestock grazing by reducing surface user conflicts.

Other Leasable Solid Minerals

There would be a small beneficial impact because of decreased surface uses conflicts.

Salable Minerals

Salable minerals probably would not be affected by the removal of grazing.

Locatable Minerals

Locatable minerals probably would not be affected by the removal of grazing from the public lands.

RANGELAND RESOURCES

Soils and Water

Livestock grazing impacts, such as, compaction, reduction of litter, organic matter, and deterioration of plant root structure would decrease. However, areas of accelerated erosion, e.g., degraded streams, which are presently downcutting, would probably not recover through natural processes, though the rate of erosion would be reduced.

Beneficial impacts to soils and water are expected. As more vegetation is established and plant vigor and cover increases, soil profiles would retain more moisture and nutrients as a result of additional deposits of organic matter. Soil productivity, structure and permeability would improve, and a reduction in onsite erosion rates would occur over the long term.

An overall improvement in water quality could be expected from removing livestock because of the subsequent revegetation of riparian areas. Favorable impacts to hydrologic processes affecting water quality and quantity would also occur. Precipitation would be retained by improved plant cover and infiltration rates. This could slowly increase over the long term. Overland flow velocities and qualities would be reduced, as would storm runoff volumes during peak discharge. Stream course channel stability would improve as scour and bank erosion are decreased in frequency and magnitude. Sediment discharges should decrease with increased vegetation cover and corresponding soil development.

Vegetation

Under no grazing, vegetation could undergo changes in species composition that would improve condition toward climax communities. Some poor vegetation condition sites could improve to fair, while some fair condition sites could improve to good condition. However, because of some limitations, precipitation and present species composition, some plant communities would probably not improve through natural processes.

Livestock Grazing

Livestock use totaling 216,369 AUMs would be lost in both the short- and long-terms. While eliminating livestock grazing in the planning area would have adverse impacts to the live- stock operators, the impacts to the regional economy would be less severe. BLM grazing privileges contribute less than five percent of the total regional demand, and discontinu- ation would not significantly affect regional economic and social conditions.

Wildlife Habitat

Under this alternative, all existing and potential conflicts between livestock and wildlife would be eliminated. As vegetation condition improves toward climax, wildlife species which favor lower successional stage plant communities would decline, while species favoring higher successional stages would increase over the long term.

Eliminating livestock grazing would affect wildlife by: (1) potential short term changes in forage availability, (2) short- and long-term aquatic riparian habitat changes from alteration of plant successional trends, and (3) potential short- and long-term improvements of habitat conditions for Threatened, Endangered, and Sensitive species.

SPECIAL MANAGEMENT AREAS

Areas of Critical Environmental Concern

Impacts affecting the six potential ACECs would be similar to those identified in Alternative D and as indicated in other sections of this alternative, including Soils and Water, Wildlife Habitat, Cave Resources, Visual Resources, and Cultural Resources.

Fire

Increases in mulch or dead plant materials are expected to show a dramatic, though unquantifiable, increase due to the removal of livestock. This increased plant material could significantly increase the incidence and intensity of range fires.

Recreation

The elimination of livestock grazing could increase certain recreation opportunities. Hunting opportunities for big game would increase initially, but would gradually decline.

In the long-term, reduced maintenance on some existing improved roads could increase semi-primitive motorized recreation opportunities.

Cave Resources

Impacts on cave resources would be the same as for Alternative D, except for the Chosa Draw Caves Complex ACEC where removal of livestock from the area would eliminate contamination of the caves.

Visual Resources

Removal of any existing rangeland improvements would reduce some of the local visual contrasts which result from rangeland improvements, and would improve the apparent naturalness of portions of the area in the long term.

Regeneration of natural vegetation would enhance natural scenic quality. Although slight, there would be a noticeable increase in vegetation diversity, and the vigor and height of grasslands in the long term.

Cultural Resources

This alternative could benefit cultural resources, because site trampling by livestock and vegetative treatments using herbicides would be eliminated.

ACCESS

If livestock grazing were eliminated from public land, additional road construction and acquisition of road easements would not be necessary for grazing administration. Construction of new roads and maintenance of existing roads by grazing permittees that currently indirectly benefit public or BLM access would be precluded by this alternative. The impact of this action on access would be low.

Increased mule deer and pronghorn numbers may increase the demand for public access.

SOCIAL AND ECONOMIC CONDITIONS

Impacts to lands and energy and minerals industries remain unchanged from Alternative D.

Elimination of livestock grazing would have a profound impact to livestock operators who are most dependent on federal land. Income would fall by approximately 56% (See Table 4-11). This would cause previously self-sufficient (assuming 275 AUs is a selfsufficient operation) operators to become dependent upon an outside source of income.

TABLE 4-11

ESTIMATED SHORT-TERM RECEIPTS, COSTS, AND RETURNS FOR 129 RANCH OPERATIONS IN THE CARLSBAD RESOURCE AREA, 1984

Items	No Grazing Alternative $	Percent Change From Alt. A
Gross Income	2,192,283.37	-55.9
Cash Costs	1,439,033.25	-56.1
Returns Above Cash Costs	753,350.12	-55.6
Depreciation	1,099,258.94	-0-
Returns to Operator Labor, Management, And Capital	-345,908.82	-42.16

Source: BLM Files.

See Appendix G for estimated costs and returns for each ranch size category.

Due to the depressed economy in the CRA, some operations would have to relocate.

Income from livestock sales would increase as herd sizes are reduced. This income would be short-lived and would fall rapidly as production decreases.

Under this alternative, grazing of livestock on public lands would be discontinued. The elimination of livestock from public lands would reduce total herd size by 56 percent. (See Table 4-12)

TABLE 4-12

PERSONAL INCOME AND EMPLOYMENT, 1984

Industry	No. of Jobs	Percent Change From Alter. A	Income $	Percent Change From Alter A
BLM Permitted Livestock	69	-56.30	210,715	-56.30
Related Livestock	646	-0.40	2,672,098	-0.30
Other Industries	35,475	0.06	406,818,903	-0.05
Total	36,190	0.30	409,701,716	-0.10

Source: BLM Input/Output Model.

See Table 4-13 for a tabular summary of socio-economic and all other impacts.

TABLE 4-13
SUMMARY OF IMPACTS

AFFECTED RESOURCES	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D	(No Grazing) DI
LAND TENURE	Disposal of 47,282 acres of tracts in Lea County would increase management efficiency and help consolidate public land through exchange. Some slight management burden would be produced through increase in split estate acreage.	Increasing the disposal base to 220,700 acres would increase the opportunities for consolidation and management efficiency. The management burden due to additional split estate. would increase minor impacts to R/W's would result from designation of 15,878 acres for avoidance	Same as for Alternative B but with moderate impacts on Right-of-Ways due to increasing Right-of-Way avoidance areas to 39,991 acres.	Same as for Alternative C but with increased impacts on Right-of-Ways due to additional Right-of-Ways avoidance acreage totalling 57,598 acres.	Same as for Alternative D.
MINERAL AND ENERGY					
Oil and Gas	Four SMAs with NSO stipulations removes 3,540 acres from conventional oil and gas development. The Maroon Cliffs SMA with NSO stips would not be enforceable since it falls within the Big Eddy Unit with no automatic elimination features. Two SMAs have land categorized as areas of high potential.	NSO stipulations within nine SMAs would restrict oil and gas activity on 11,757 acres. Several locations may require directional drilling or total elimination, depending on location and depth of well. Seven SMAs contain land categorized as areas of high potential with five being adversely affected by additional drilling cost.	Increasing acreage with NSO stipulations to 44,007 acres would constrain production on 23 SMAs. Special stipulations including NSO, seasonal drilling restrictions, and ORV designations would delay and increase cost of drilling wells in most SMAs and eliminate drilling entirely in certain areas where target formations may be unreachable by directional drilling. Ten SMAs adversely impact oil and gas	Increasing acreage with NSO stipulations to 59,527 acres would further constrain production on 23 SMAs. Expanding SMA boundaries and further restrictions from NSO, seasonal drilling restrictions, and ORV designations would increase development cost or eliminate production entirely on eighteen areas. Thirteen SMAs contain lands of high potential for oil and gas with eleven areas being adversely affected.	Same as for Alternative D.
LEASABLE SOLID MINERALS					
Potash	Impacts would be minimal. Areas currently closed to leasing have been foregone.	Impacts would generally be minimal. Special stips should only affect core testing.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
Other Solid Leasables	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.
SALABLE MINERALS	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.

TABLE 4-13
SUMMARY OF IMPACTS
(continued)

AFFECTED RESOURCES	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D	(No Grazing) DI
LOCATABLE MINERALS	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.	No significant impacts.
RANGELAND RESOURCES					
Soil & Water	Erosion and sedimentation would continue due to mineral development. Stable watershed condition would prevail but highly erodable areas and springswould not have sufficient protection.	Same as Alt. A but three highly erodable areas and six springs would be protected. Grazing systems would improve watershed condition on 240,000 acres.	Four highly erodable areas and six springs would be protected.	Same as Alt. C but additional acreage would be protected. Erosion and sedimentation due to ORV use would be decreased on over 300,000 acres.	Same as for Alt. D but with reduced erosion and sedimentation and improved watershed condition due to increased vegetation cover.
Vegetation	Conditions could remain static or decline over the long-term. Site-specific, adverse impacts could continue with some detrimental impacts to vegetation and watershed condition within the 765,000 acres not under existing AMPs.	Intensive grazing management would significantly improve vegetation condition in the long-term. Good condition rangeland would increase by 166,000 acres with additional conversion of poor condition rangeland to fair condition.	Intensive grazing management would improve vegetation in the long-term. Good condition rangeland would increase by about 56,000 acres. Some minor conversion of poor condition range to fair condition would also occur.	There would be a slight improvement in type and productivity of forage species over the long term with a slight increase in good condition rangeland (25,000 acres) and a slight decrease in poor condition range.	Condition would move toward climax communities. Some poor condition sites would improve to fair condition and some fair condition sites would improve to good condition, other plant communities would probably not improve.
Livestock Grazing	No significant impacts.	There would be an initial 12% reduction in active preference AUMs but a long-term 17% increase to 232,417 AUMs.	There would be an initial 12% reduction in active preference AUMs but a long-term 15% increase to 225,458 AUMs.	There would be an initial 18% reduction in active preference AUMs but a long-term decrease of 1% active preference.	There would be 216,369 AUMs lost to livestock grazing from public lands.
Wildlife and T&E	965,000 acres of habitat would remain static or decline in the long term. Big game numbers would remain at 9,300 or slightly decline.	80,000 acres of habitat conditions would improve in the long term and big game herds would slightly increase to 9,350.	120,250 acres of habitat conditions would improve in the long term. Big game numbers would increase to 9,850.	240,000 acres of habitat conditions would improve. Big game numbers would remain at 9,850.	There would be positive impacts on 965,000 acres of habitat.
SPECIAL MANAGEMENT AREAS					
Recreation	In the short term, there would be sufficient opportunities for most dispersed recrea-	Impacts on dispersed recreation use would be similar to Alternative A. Management	Increased access to public land could provide for a better balance of recreation	Impacts on dispersed recreation use would be similar to Alternative A. Impacts on	Same as for Alternative D, but hunting opportunities for big game would slightly increase

TABLE 4-13
SUMMARY OF IMPACTS
(continued)

AFFECTED RESOURCES	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D	(No Grazing) D1
	tion uses (i.e., hunting). However, there would be a long-term reduction of certain already limited recreation opportunity settings. Minerals and other resource development would cause continued moderate to high adverse impacts on most high value recreation use opportunities. Some protection would continue on four areas (8,093 acres) important for recreation.	of eight SMAs (87,740 acres) with important recreation values would provide some, though overall inadequate, protection of high quality recreation opportunities in most SMA areas.	opportunities for dispersed recreation use. Increased management of eight SMAs (132,300 acres) with important recreation resources would greatly enhance the quality of recreation opportunities for these areas.	eight SMAs (132,480 acres) with high quality recreation resources would be similar to Alternative C, except a 17,607 increasein R/W avoidance acreage would have an additional positive impact by retaining certain recreation settings and opportunities.	initially, then gradually decline.
Off Road Vehicles (ORV) Use	Sufficient ORV opportunities would continue to be available. A total of 24,381 acres would be designated as limited or closed.	An additional 29,674 acres of ORV closures and limitations over Alternative A would slightly reduce ORV use opportunities. Intensive ORV use would be protected in the Alkali Lake and Hackberry Lake SMAs (56,700 acres).	Same as for Alternative B, but with an additional 33,843 acres of ORV closures and limitations.	Although ORV opportunities would moderately decrease due to a 235,861-acre increase over Alternative C in "limited" designations, the most popular ORV use areas would remain open.	Same as for Alternative D.
Cave Resources	Current protective stipulations would provide some, but not adequate, protection of 18 caves (595 acres) and cave resources within the 350,000-acre Cave Resource Primary Occurrence Zone from potentially destructive impacts such as mineral development.	Expanding the cave resource primary occurrence zone to 387,000 acres would increase protection of caves in this area. Designation of the Cave Resource Special Recreation Management Area would further protect the 18 intensively managed cave areas (4,890 acres).	There would be significantly greater protection to cave resources by expanding use restrictions in the 387,000-acre cave resource primary occurrence zone, by increasing protection of the 18 intensively managed caves (7,900 acres) and by private land acquisition.	Impacts would be similar to Alternative C but with greater cave protection within the 387,060-acre cave resource primary occurrence zone and with significant increased protection of the Chosa Draw Cave Complex (ex., 1,840-acre increase in NSO stipulation).	Same as for Alternative D but with elimination of contamination of Chosa Draw Caves Complex.

TABLE 4-13
SUMMARY OF IMPACTS
(continued)

AFFECTED RESOURCES	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C	ALTERNATIVE D	(No Grazing) D1
Visual Resources	Long-term minerals and other resource developments would cause moderate to high adverse impacts to some higher quality scenic and sensitive visual resources.	Some protection of higher quality scenic and sensitive visual resources would be provided. Overall, moderate to high long-term visual contrasts would occur on 85% of the area's characteristic landscape.	Most higher quality scenic and sensitive visual resources would have adequate protection. Overall, impacts to other visual resources would be similar to those in Alternative B.	Visual contrasts in the characteristic landscape of higher quality scenic and sensitive viewsheds would be minimized. Overall, impacts to other visual resources would be similar to those in Alternative B.	Same as Alternative D with additional positive impacts from enhanced vigor and height of grasses and vegetation diversity.
Cultural Resources	The irreversible indirect cumulative effects of surface disturbance would continue in the long-term. 15,827 acres would be specifically managed to protect cultural resources.	The long-term effect would be an intensification of the indirect adverse effects to cultural resources. 16,198 acres would be specifically managed to protect cultural resources.	Cultural resource values enhanced by the SMAs; however, the long-term cumulative effects would be same as for Alternative A. 17,658 acres would be specifically managed to protect cultural resources.	The SMAs would provide protection for cultural resources in addition to 18,918 acres specifically to protect cultural resources.	No significant impact.
ACCESS	Although most public lands would be accessible, there would still be 21 public land tracts lacking adequate access. Existing restrictions would protect some sensitive resource values.	Same as for Alternative A but increased access in one area and minor reduction of access within 19 tracts (54,058 acres) would further protect sensitive resource values and increase in one area.	Same as Alternative B except increased public access within a total of 25 tracts and restricted access in 23 tracts would substantially resolve access problems and adequately protect sensitive resources.	Acquiring access in only four tracts would enhance management of Special Management Areas (SMAs) but there would still be 21 public land tracts lacking adequate access.	Same as Alternative D except that reducing road construction and maintenance by ranchers would increase maintenance costs for the BLM and/or reduce access throughout the R.A.
SOCIAL AND ECONOMIC CONDITIONS	No significant impact.	No significant impact.	No significant impact.	No significant impact.	No significant impact.

CHAPTER 5

CONSULTATION AND COORDINATION

INTRODUCTION

The Carlsbad Resource Management Plan/ Environmental Impact Statement (RMP/EIS) was prepared by an interdisciplinary team of resource specialists from BLM's Carlsbad Resource Area (CRA) and the Roswell District Office and New Mexico State Office in Santa Fe. A list of the participating staff and contributors is located in Table 5-1. During the planning process, formal and informal efforts have been made to involve the public, other Federal agencies, and State and local governments. Several points of public involvement are mandated and were complied with, along with numerous other actions to involve the public.

FORMAL CONSULTATION

Consultation with the Fish and Wildlife Service (FWS) is required prior to initiation of any project by BLM that may affect any Federally threatened, endangered or sensitive plants or animals or their habitats. Consultation is required by Section 7 of the Endangered Species Act of 1973. This RMP/ EIS is considered a major project, and formal consultation has been initiated. Letters of formal consultation are on file in the CRA office.

The BLM cultural resource management program operates in accordance with 36 Code of Federal Regulations (CFR), Part 800, which provides specific procedures for consultation between BLM and the State Historic Preservation Officer (SHPO). Memorandum of Agreement (MOA) NMSO-168 between the SHPO, Advisory Council on Historic Preservation and the BLM New Mexico State Office became effective October 19, 1982. This MOA incorporates procedures for exchanging information with the SHPO concerning cultural resources on public and private lands. It defines activities requiring consultation and establishes reporting standards. Copies of consultation letters are in the Management Situations Analysis (MSA) in the CRA office.

CONSISTENCY WITH OTHER PLANS

BLM planning regulations require that RMPs be "...consistent with officially approved or adopted resource related plans and the policies and programs contained therein of other Federal agencies, State and local governments, and Indian tribes, so long as the guidance and resource management plans are also consistent with the purposes, policies and programs of Federal laws and regulations applicable to public land..." (43 CFR 1610.3).

Table 5-2 lists land-use plans of planning jurisdictions in effect at this writing. These were identified during the consistency review as "officially approved or adopted" plans of agencies or other governmental entities likely to be affected or influenced by the Carlsbad RMP.

At this time there are no known inconsistencies between any of the alternatives and officially approved and adopted resource related policies or programs of other Federal agencies, State and local governments and Indian tribes. Continuing coordination and consultation will take place during the public comment periods on the Carlsbad Draft RMP/ EIS, Final RMP/ EIS and the Record of Decision.

PUBLIC PARTICIPATION

Public participation in the Carlsbad RMP is a dynamic process occuring throughout the development of the plan and beyond. Table 5-3 outlines the formal public participation process by action item. In addition to formal public participation steps, informal contacts occur frequently with public land users and interested publics through meetings, field trips, telephone calls or letters. All applicable public participation is documented and analyzed in the planning process, and is kept on file in the CRA.

TABLE 5-1
LIST OF PREPARERS

Name	RMP Responsibility	Education	Experience
		INTERDISCIPLINARY TEAM	
Robert L. Alward	Recreation ORV VRM Wilderness	B.S., Wildlife Management Humboldt State University	BLM, 9 yrs. - Outdoor Recreation Planner (ORP) - Recreation Technician National Park Service, 4 yrs. - Interpretation/ Resource Protection Ranger
Linda C. Brett	Cultural Resources Paleontology	B.S., Biology University of New Mexico M.A., Anthropology Eastern New Mexico University	- BLM 2 yrs. - Archeologist - Eastern NM University, 3 yrs. - Cultural Resource Management - Eastern NM University, 3 yrs. - Archaeological Research
Michael C. Bunker	Access	B.S. Forest Management Utah State University	BLM, 12 yrs. - District ORP - Resource Area ORP - Natural Resource Specialist - Range Technician
Frank D'Amore	RMP/EIS Team Leader	B.S., Natural Resource Management Graduate Study, Regional Planning University of Nevada, Reno	BLM, 12 yrs - EIS Team Leader - Planning Coordinator - Outdoor Recreation Planner
James R. Goodbar	Lands Realty Rights-of-Way Cave Resources	B.S., Park & Recreation Management Texas A&M Graduate Study, Physical Geography Western Kentucky University	BLM, 6 yrs. - Realty Specialist - Cave Specialist - Recreation Technician
Thomas P. Kelley	Social and Economic Conditions	B.S., Agriculture University of California, Chico	BLM 6 yrs. - Planning Coordinator - Environmental Coordinator - Range Conservationist Forest Service 4 yrs.

TABLE 5-1 (continued)
LIST OF PREPARERS

Name	RMP Responsibility	Education	Experience
John C. Novosad	Soil Air Water	B.S., Biology University of Rhode Island M.S., Natural & Environmental Res. University of New Hampshire	BLM, 8 yrs. - Environmental Protection Specialist - Physical Scientist - Soil Scientist
Dean Nyffeler	Potash Solid Leasable Minerals, Salable Mineral Materials	B.S., Geology Brigham Young University Master of Public Administration Brigham Young University	BLM, 5 yrs. - Lead District Solids Staff - Resource Area Geologist USGS, 1 yr. - Mining Geologist
James G. Pettengill	Oil and Gas	B.S., Geology Allegheny College M.S. Geology Northern Arizona University	BLM & USGS, 13 years - Geologist: Oil and Gas, Potash, Planetary Geology, Laboratory Analysis
Gerald W. Queen	Geology Minerals and Energy Resources Subsurface Management	B.A., Earth Science (Geology) Chadron State College	BLM, 2 yrs. - Geologist
Edwin J. Singleton	Fire Vegetation Livestock Management	B.S., Range Management New Mexico State University M.A., Range Management Texas Tech University	BLM, 8 yrs. - Range Conservationist Forest Service, 3 yrs. - Range Conservationist
Stan Van Velsor	Wildlife Habitat (MSA)	B.S., Wildlife Science New Mexico State University	BLM, 6 yrs. - Wildlife Biologist - Range Conservationist - Wild Horse Specialist
Edward S. Slagle	Paleontology	B.S., Geology Western Carolina University M.S., Geology East Carolina University	BLM, 2 1/2 yrs. MMS & USGS, 2 1/2 yrs - Geologist

TABLE 5-I (concluded)
LIST OF PREPARERS

Support Staff

Stan Briscoe - Cartography, Graphics
Jack Bryan - Cartography, Graphics
Rhonda Gomez - Clerical
Janet Gonzales - Word Processing
Terry Keim - Illustration
Cathy Queen - Word Processing
Judy Yslas - Word Processing
Bobbe Young - Administration

Contributors and Reviewers

Roswell District

Howard Gebel - Livestock/Vegetation
Pat Kelley - Planning/Review Coordination
Jim Konopinski - Soil/Water
Tim Kreager - Review Staff Supervision
Larry LaPlant - Wildlife/T&E Species Habitat
Wayne Ludington - Environmental Coordination
Dean Nyffeler - Solid Minerals
Jerry Orr - Fire, Access
Elmer Patterson - Fluid Minerals
Jim Pettengill - Fluid Minerals
John Rakowski - Lands/Realty/Rights-of-Way
Ann Ramage - Cultural Resources
Edward Slagle - Paleontological

Albuquerque District

Kent Hamilton - Social and Economic Profile

Socorro Resource Area

Jane Farmer - Writer-Editor

New Mexico State Office

Chris Anderson - Air Quality
Robert Armstrong - Minerals
Ron Bartel - Fluid Minerals
Phil Beck - Lands/Realty
Don Boyer - Formatting/Printing
Steve Fosberg - Cultural Resources/
Natural History
Ed Heffern - Paleontology/Minerals
Robert Heidemann - Recreation/ORV/VRM
Bill Jonas - Minerals
Jon Joseph - Wilderness
John Kenny - Planning & Environment
Ralph Leon - Mapping/Graphics
Brian Mills - Wildlife Habitat
Jim Olsen - Minerals
Alvin Pack - Rights-of-Way
Teodoro Rael - Ranch Budgets/Economics
Rudy Romero - Mapping/Graphics
Verlyn Saladen - Soils
Robert Sellers - Access
Ralph Sena - Planning Coordination
Joe Sovcik - ACEC
Jay Thietten - Fire Management
Jerry Townsend - Range Management
Max Ogg - Access

TABLE 5-2
SUMARY OF MAJOR PLANNING JURISDICTIONS AND IDENTIFICATION OF LAND-USE PLANS

Agency	Formally Adopted or Proposed Land-Use Plan or Policy
Federal	
Bureau of Land Management	Management Framework Plans
Forest Service	Lincoln National Forest Land Use Plan
National Park Service	Backcountry Management Plan and EA, Carlsbad Caverns National Park, New Mexico. 1985.
Bureau of Reclamation	
Department of Energy	
State	
Governor of New Mexico	
Local	
Eddy County	Eddy County Land-Use Plan

*As indicated in the text, these plans are not enforced by any zoning or other regulatory requirements.

TABLE 5-3
PROPOSED CARLSBAD RMP/EIS PUBLIC INVOLVEMENT ACTIONS

02-05-86	News Release for DEIS
03-10-86	Begin 90-day public comment period
May 86	Public Hearing on DEIS
06-09-86	Deadline for public comments
07-03-86	Complete analysis of comments
08-20-86	Advance copy of plan/FEIS to Governor; begin 60-day review by State
09-25-86	File FEIS with EPA; begin 30-day protest period
10-20-86	Deadline for Governor's review
10-24-86	Deadline for protest to Director, BLM
11-06-86	Publish Governor's recommendations, if not raised previously - 30-day public review
12-06-86	End public review of Governor's recommendations
12-06-86	Deadline to complete protest resolution
01-06-87	State Director responds to Governor
01-06-87	Public review of changes due to protest (if significant) begin
02-06-87	Public review of changes due to protest (if significant) ends
02-06-87	End Governor's appeal period to Director
02-23-87	Deadline for Director to respond to Governor's appeal

Scoping: Preplanning efforts for the Carlsbad RMP included correspondence, informal consultations, and meetings with livestock grazing permittees to establish range inventory procedures and to initiate selective management categorization. In November 1983 BLM published a Notice of Intent (NOI) in the Federal Register announcing a 60-day public involvement period (December 1983 to January 1984) to gather input on possible land use issues to be considered in the Carlsbad RMP.

Brochures outlining the planning process, along with response forms for input on RMP issues, were mailed to a list of over 700 addressees. A series of six public meetings were held in Artesia, Hope and Carlsbad in December 1983. During issue identification, news releases were also sent to over 50 newspapers and radio and television stations in New Mexico and west Texas.

Responses received from the meeting attendees and returned by mail helped to solidify the RMP's issues and focus the planning analysis on the unresolved land use allocation questions. After the final issues were identified, they were mailed out along with Draft Planning Criteria to an updated list of other agencies, businesses, organizations and individuals interested in management of the public lands in the CRA. In May 1984 another 30-day public comment period on the Draft Planning Criteria resulted in substantive input to BLM managers which helped develop the decision needs, criteria for formulating alternatives, and directions to the interdisciplinary team.

PUBLIC REVIEW OF THE DRAFT RMP/ EIS

Table 5-4 is a listing of various Federal, State, and local agencies, organizations and individuals to which the Draft RMP/EIS will be sent for review and comment.

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

NEW MEXICO CONGRESSIONAL DELEGATION

U.S. REPRESENTATIVE JOE SKEEN	A. EPPERS
U.S. SENATOR JEFF BINGAMAN	MS. SCOTT ALLEY
U.S. SENATOR PETE DOMENICI	P. CORN

NEW MEXICO STATE GOVERNOR

GOVERNOR OF NEW MEXICO	HONORABLE TONEY ANAYA

NEW MEXICO LEGISLATORS

STATE REPRESENTATIVE (51)	LEONARD SHEFFIELD JR.
STATE REPRESENTATIVE (52)	MAURICE HOBSON
STATE REPRESENTATIVE (53)	MRS. JOHN L. GREEN
STATE REPRESENTATIVE (54)	JAMES K. OTTS
STATE REPRESENTATIVE (55)	ROBERT S. LIGHT
STATE REPRESENTATIVE (56)	BEN HALL
STATE REPRESENTATIVE (57)	RICHARD T. KNOWLES
STATE REPRESENTATIVE (58)	BARBARA A. CASEY
STATE REPRESENTATIVE (59)	ROBERT B. CORN
STATE REPRESENTATIVE (60)	GENE C. SAMBERSON
STATE REPRESENTATIVE (61)	DAN C. BERRY
STATE REPRESENTATIVE (62)	R. P. WALLACH
STATE REPRESENTATIVE (63)	SUSAN A MCDOWELL
STATE REPRESENTATIVE (64)	JOHN H. DICKSON
STATE REPRESENTATIVE (66)	GARY D. ROBBINS
STATE REPRESENTATIVE (67)	C.L. MORELAND
STATE REPRESENTATIVE (70)	SAMUEL F. VIGIL, JR.
STATE SENATOR (27)	CALEB J. CHANDLER
STATE SENATOR (31)	CRESS S. INGLE
STATE SENATOR (32)	TIMOTHY Z. JENNINGS
STATE SENATOR (33)	BUDD H. HEBERT
STATE SENATOR (34)	MARVIN L. WATTS
STATE SENATOR (39)	JAMES L. MARTIN
STATE SENATOR (40)	WILLIAM P. VANDERGRIEF
STATE SENATOR (41)	JOSEPH K. HARVEY
STATE SENATOR (42)	BILLY J. MCKIBBEN
STATE SENATOR (7)	JOHN L. MORROW

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

NEW MEXICO LEGISLATORS

STATE SENATOR (8)	ALFRED W. NELSON

FEDERAL AGENCIES

AGRI. STAB. & CON. SERVICE	NM STATE OFFICE
ASSESSMENT DIVISION	OFFSHORE ENV
ASST SEC. AIR FORCE	GARY VEST
BUREAU OF INDIAN AFFAIRS	BRANCH OF FORESTRY
BUREAU OF LAND MANAGEMENT	DIRECTOR (202)
	STATE DIRECTOR (934)
	SOCORRO RA
	TAOS RA
	OKLAHOMA RA
	LAS CRUCES DO
	STATE DIRECTOR (912)
	ALBUQUERQUE DO
	ALBUQUERQUE DO
	FARMINGTON RA
	RIO PUERCO RA
	ROSWELL RA
	LC/LORDSBURG & WHITE SANDS RA
BUREAU OF MINES	MIN DATA ANALYSIS
BUREAU OF RECLAMATION	OFFICE 426
	DIV OF ENV AFFAIRS
CORPS OF ENGINEERS	CHIEF, PLANNING DIV
DEPARTMENT OF ENERGY	KEN PORTER
	OFF OF ENV COMPL (EP.36)
EDDY COUNTY EXTENSION SERVICE	
ENV PROTECTION AGENCY	REG EIS COORD REG VI
FED ENERGY REGULATORY COMM	ELEC POWER REG-301RB
FEDERAL HIGHWAY ADMIN	REGION VI
FOREST SERVICE	LINCOLN NATL FOREST
	OFFICE OF ENV COORD
	CRAIG P. WILCOX
NATIONAL PARK SERVICE	DIV OF ENV (762)
	CARLSBAD CAVERNS
	REGIONAL DIRECTOR DIV. OF ENVI COORD.
	LARRY HENDERSON
NUCLEAR REGULATORY COMM	

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

FEDERAL AGENCIES

OFFUT AIR FORCE BASE	HQ SAC/DEPV
SOIL CONSERVATION SERVICE	WILLIAM H. SEE
US FISH & WILDLIFE SERVICE	CHIEF, DIV OF ENV CD
	FIELD SUP. ECO SER
US GEOLOGICAL SURVEY	ENV. AFFAIRS PROGRAM
US LEVX-PENTAGON	OFF OF ENV PLANNING
US SEC, INTL BNDY WATERS COMM.	PAUL E. STORING

NEW MEXICO LOCAL AND REGIONAL AGENCIES

CITY OF HOBBS	MANAGER
COUNCIL OF GOVERNMENTS	EASTERN PLAINS
COUNTY COMMISSIONERS	CHAIRMAN, EDDY
	CHAIRMAN, OTERO
	CHAIRMAN, CHAVES
	CHAIRMAN, LEA
COUNTY PLANNER	CHAVES COUNTY
DEPT. OF ECONOMIC DEV.	EDDIE LYON
MANAGER	CHAVES COUNTY
	EDDY COUNTY
	LEA COUNTY
MAYOR	CITY OF CARLSBAD
	CITY OF EUNICE
	CITY OF JAL
	CITY OF ROSWELL
	CITY OF TATUM
	CITY OF LOVINGTON
	CITY OF ARTESIA
NM ENVI. IMPROVEMENT DIV.	DAVID L. TANNER
SE NEW MEXICO ECON. DEV. DIV.	

TEXAS LOCAL AND REGIONAL AGENCIES

DAWSON COUNTY COURTHOUSE	COUNTY JUDGE

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

UNIVERSITIES

AGY CONSERVATION ARCH.	DON LANDIS
	JOHN MONTGOMERY
HUMBOLT STATE UNIVERSITY	NATIVE AMERICAN CAREER EDUCATION
NM NATURAL HISTORY INSTITUTE	ROGER S. PETERSON
TEX TECH DEPT OF RANGE & WILD.	FRED GUTHERY
	RONALD SOSEBEE
UNIVERSITY OF TEXAS	STEVE HARTMANN

LIBRARIES

BRANIGAN LIBRARY-LAS CRUCES	DON DRESP
LINDA HALL LIBRARY-KANSAS CITY	DOCUMENTS DEPARTMENT SAN 309-0353
PUBLIC LIBRARY - ALBUQUERQUE	REFERENCE DESK
PUBLIC LIBRARY - HOBBS	REFERENCE DESK
PUBLIC LIBRARY - ROSWELL	REFERENCE DESK

ADVISORY COUNCIL

ROBERT G. ARMSTRONG
HERB ATKINSON
DANIEL C. BERRY
MARK R. DRAPER
BUD EPPERS
GENE HAMILL
W.C. TREAT
J.R. WALLS
MARVIN L. WATTS
JERRY E. WOOD

ALLOTTEES

MARVIN & LEROY ALBRIGHT
ARTURO F. ARIAZ
ALBERT BACH
EMIL BACH JR.

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

ALLOTTEES

WILMA BAILLIE
JOHN BALLARD
HARLEY BALLARD
DOYLE & LEO BARKER
DALTON BELL
R.C. BENNETT
PAUL BOND
W.D. BOUNDS
CARL BRININSTOOL
WILLIAM H. BRININSTOOL
GEORGE M. CASABONNE
JOHNNY CASABONNE
SAMMY D. CLARK
BERNARD L. CLEVE
HAZEL CLEVE
WILLIAM D. COLWELL
DALE D. COOPER
JAMES H. CORN
R.F. COUPLAND
JESSE M. CRAIG
DOEPP CROCKETT
INEZ & WILLIAM CROCKETT
EUNICE CURTIS
HARLEY & LAVELLE DAVIS
W. D. DINWIDDIE
LESTER S. DONAGHE
CURTIS J. DOYAL
MILLARD DUBLIN
JACK & DONNA EAVENSON
SAM ELKINS
HAROLD G. FAULK
ROBERT K. FIELDS
TOM FIGG
CHESTER FINE
ROBERT H. FORREST
HOWARD GILCHRIST
WILLIAM & BEVERLY GILLOCK
J.W. GISSLER
HENRI GRANDI
HART M. GREENWOOD, JR.
LARRY L. GREGORY

BLAINE & POLLY HAINES
ERNEST & THELMA HARWELL
GLEN & BILLY HEDGECOCK
PHILLIP D. HEFNER
JOE HELM
ELSIE HENDRICK
C.E. & ELLA HOLEMAN
WALKER HOOD
HAROLD HOUGHTALING
RICHARD & HOWARD HOWELL
BONNER IVEY
BUCK JACKSON
CHARLES F. JAMES
JAMES & NORA JENKINS
OLIVER & WILMOTH JOHNSON
W.I. JOHNSON
G.I. & GERALDEAN JOHNSON
JOHNNY W. JOY
W.R. JOY JR.
G.E. JUDKINS
KAP KELLEY
W.G. KENNEDY
CLIFF KEY
LAURI JOE KINCAID
TIMMIE KLEIN
MRS. FRANKIE V. LAMAN
OPAL & DEAN LEE
TERRY LEWIS
HERMAN A. LINDLEY
TOM LINEBERRY
PATRICIA SHAFER LYMAN
W.A. MADDOX
MALCOM R. MADERA
ELGIN MARQUART
H.V. MARTIN
T.A. MAYS
DALLAS M. MCCASLAND
JAMES R. MCCRORY
ELLEN MCDONALD
JOE MCNEW
CARL L. McCORMICK

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

ALLOTTEES

J.H. McMAHAN
LEWIS MEANS
PRESTON MEANS
ROBERT D. MELLARD
GEORGE E. MICHAELIS
J.W. MILLER
J.C. MILLS
BETTY JEAN MOATS
W.L. MOBLEY, JR.
CHARLES MULCOCK
JOHN NEILL
RAYMOND & BILL NETHERLIN
ANNE NYMAN
LEO & NORMA PACHECO
HEZZIE J. POWELL
RUTH N. PUE
A.H. RAINS
JESSE F. RAYROUX
LOREN A. REEVES
MRS. RUTH E. ROBBINS
ROBERT D. ROSS
DAVID J. RUNYAN
DONNIE G. SEWELL
JACK SHELY
GEORGE S. SISNEROS
ELMER SKINNER
L.E. SLOAN
W.G. SMITH
KENNETH SMITH
MARK SMITH
WM. C. SMITH
JIM & PENNY SPEARS
J.D. SPEARS, JR.
JOE M. STEEL, JR.
GLENN STEVENSON
JIMMIE R. STONE
J.W. TAYLOR JR.
SAMMY & R.N. TEEL
RAY KENT TERRY
DONALD THIGPEN
GARY THOMPSON

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

ALLOTTEES

	F.G. TRACY
	LLOYD L. TREAT
	JOHNNY F. TULK
	J. C. TULK
	FARRELL VAN CLEVE
	JAMES M. VANDEWART
	RALPH & RACHAEL VANDEWART
	PETE C. VESCOVO
	JOHN C. WARD JR.
	MRS EVELYN WATTS
	SONNY WATTS
	I.M. & L.R. WHITE
	DALE WILLHOIT
	ALICE RUTH WILLIAMS
	JOHN WOODWARD
	ZULA B. WYLIE
BEKER INDUSTRIES CORP.	
BERRY RANCH	D.C. BERRY III
BLAIN HAINES & EMIL BECK JR.	
BOX CANYON RANCH	R. HNULIK
CASWELL RANCHES	NORMAL CASWELL
CAVINESS CATTLE CO.	GARY CAVINESS
CHARLES R. MARTIN, INC.	CHARLENE WARD
CLYDE CHAMPION ET AL	CLYDE CHAMPION
CORALLES LIVESTOCK CORP.	GAYLE BLUTH
DAVID & A.G. KINCAID	HUGH M. KINCAID
DAVIDSON RANCH	
DEEP WELLS RANCH INC.	FRANCE H. RANDOLPH
DEER CANYON RANCH INC.	
DELAWARE RANCH INC.	DRAPER BRANTLEY, JR.
DIAMOND & HALF INC.	CARL JOHNSON
DIAMOND A. CATTLE CO.	ARTHUR EVENS
DINWIDDIE CATTLE CO.	W. D. DINWIDDIE
E. KLEIN/V. LINAM ESTATES	FAYE KLEIN
E.C. WINTERS ESTATE	JAMES BRYANT
EARL KONEGAY ESTATE	TRUST DIVISION 1ST INTERSTATE BANK
ERNEST McGONAGILL	WINOLA HELBERT
F. V. CAUHAPE ESTATE	MADLYN CAUHAPE
FANNING & SONS, INC.	
FELIZ RIVER RANCH	HOBBY H. McCALL, JR.
FETCH LAND & CATTLE	ROLAND J. FETCH

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

ALLOTTEES

FLYING H RANCH	
FOREHAND RANCHES,INC	
FRANK W. RUNYAN TRUST	FRANK W. RUNYAN
G.P. SIMS ESTATE	LEO V. SIMS
GEORGE TEEL INC.	
GEORGIA & MACK CAMPBELL	CHARLES CAMPBELL
GIBBINS TRUST	J. P. GIBBINS
HAVEN BROTHERS	GEORGE MURPHY
HUNTER RANCH	LYLE HUNTER
IMCC	RON CADE
IRA TIDWELL	DEE TIDWELL
J. COOKSEY ESTATE	EVELYN CARR
J. J. STEEL TEST TRUST	CLOVIS NAT'L BANK
J.B. RUNYAN INC.	
J.C. TULK, INC.	
JAY LECK ESTATE	MAYS JENKINS
JOHN W. COOPER ET AL	JOHN W. COOPER
KXE RANCH	GENE CUTLER
LARRY STRAIN	RONALD RAWDON
LLOYD FOSTER ESTATE	GLADYS IRENE PRICE
LOS OJOS RANCH	R. S. GOODING
M&M CATTLE CO.	
M.B. KINCAID ESTATE	
MADERA ET AL	RUBERT MADERA
MAYBERRY INC.	BOB L. MAYBERRY
MERCHANT LIVESTOCK	
MR. H. FARRELL ESTATE	H. L. MORRISON, JR.
OGALALLA LAND, LTD	PARKER MOORE
OGDEN FARMS & CATTLE	J.C. OGDEN
PARDUE FARMS	
PAUL WALLACH ESTATE	BERNARD L. HOUSE
PENASCO RIVER RANCH	T.Z. JENNINGS
PERMIAN EXPLORATION CORP.	COLEN McMILLAN
R.W. SEELEY ESTATE	
ROBINSON CATTLE CO.	PAULINE R. HARPER
ROSS RANCH INC.	CARL E. ROSS
ROSS ROBINSON,ET AL	
ROSS SEARS ESTATE	TOM E. VANDIVER
S&W CATTLE CO.	
SAM BECKHAM ESTATE	PATRICIA AINSWORTH
SCHARBAUR CATTLE CO.	

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

ALLOTTEES

SLASH X RANCH	TOM ELLISON
SNYDER RANCHES, LTD.	LARRY SQUIRES
SONNY WRIGHT INC.	
TAYLOR & HEIDEL INC.	
TOM WOODS/T.E. RUNYAN	T.W. RUNYAN
TRI-Y RANCH	HAROLD TAPP
W&B MENEFEE INC.	
W.D. JOHNSON JR. TRUST	JOHN T. ARCHER
WARD RANCH	BENITA BIRMINGHAM
WAYNE MOORE & WILSON SMITH	WAYNE MOORE
WILL N. TERRY ESTATE	
WILLIAM BATES ET AL	W. L. BATES
WILLIAMS & SON CATTLE CO.	
WILLIE STEVENSON ESTATE	BILLIE J. WOODS
WILSON RANCH	CARROLL WILSON
WM. TRUITT ESTATE	
3 FORKS CATTLE INC.	J.B. PATTERSON
4T E KT CATTLE COMPANY	W. BOLES

CONSERVATION GROUPS

AUDUBON SOCIETY	CENTRAL NEW MEXICO
DEFENSE COUNCIL	NATURAL RESOURCES
HERITAGE PROGRAM	ROCKY MTN. NATURAL
NATIONAL WILDLIFE FEDERATION	PUBLIC LANDS & ENERGY DIVISION
SAVE OUR BATS	WANDA SHETRONE
SIERRA CLUB	EL PASO GROUP
	ALBUQUERQUE GROUP
	DEBBIE SEASE
	ROGER D. STEEB
SPORTSMAN CLUB	WILBURN D. CUNNINGHAM
THE NATURE CONSERVANCY	JOHN EGBERT
TULAROSA BASIN GROUP	SIERRA CLUB
WILDERNESS SOCIETY	TERRY SOPHER
WILDLIFE FEDERATION	BOB BURNETT
	LEO QUITBERG
	THOMAS THORTON
WILDLIFE MANAGEMENT INSTITUTE	
WILDLIFE SOCIETY	EXECUTIVE DIRECTOR

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

INDUSTRIAL ORGANIZATIONS

MINERALS EXPLORATION COALITION	
NM OIL & GAS ASSOC.	
NM PUBLIC LANDS COMMITTEE	FRED SCHLICHER

INDIVIDUALS

	MR. ED L. BUCK
	CHARLES R. CAMPBELL
	EVELYN D. COOKSEY
	ZANE DOHNER
	GEORGE EARLY
	FRED N. HIGGINS
	LANCE McCOLD
	JAMES MOUTRAY
	DONALD F. ODEN
	KERRY OLSON
	JAMES SHIELDS
	BOB SWAYZE
LOCO HILLS FIRE DEPT.	HAROLD L. HANNAH

LIVESTOCK RELATED ORGANIZATIONS

NM BEEF COUNCIL	RICK SHAW
NM FARM & LIVESTOCK BUREAU	B.J. PORTER
NM WOOL GROWERS INC.	
PUBLIC LANDS COUNCIL	NATIONAL CATTLEMAN'S ASSOC.
RANGE IMPROVEMENT TASK FORCE	DR. V.W. HOWARD, JR.
	DR. JAMES E. KNIGHT
	KIRK MCDANIEL
	JERRY G. SCHICKEDANZ
SE NEW MEXICO GRAZING ASSOC.	BUD EPPERS
	BOB JONES
SOCIETY FOR RANGE MANAGEMENT	

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

MINERAL AND ENERGY INTERESTS

DELMER W. BERRY
ROBERT BOLING
GEORGE CHASE
CLIFFORD CONE
WILLIAM P. DOOLEY
ROBERT N. ENFIELD
CARL ENGWELL
DAVID FASKEN
C. O. FULTON
CURTIS HANKAMER
ROGER C. HANKS
DOYLE HARTMAN
PAUL HEGWAR
TOM L. INGRAM
CURTIS INMAN
JAMES T. JENNINGS
HERMAN J. LEDBETTER
W. H. McKINLEY
BILL L. MILLER
WAYNE MOORE
FRED POOL, JR.
HARRY PTASYNSKI
GEORGE D. RIGGS
CARL A. SCHELLINGER
JOHN R. SEAY
J. G. SELL
C. E. STAPLES
J. RAY STEWART
J. CLEO THOMPSON
C. W. TRAINER
J. M. WELCH
MILTON WESSELS
V. H. WESTBROOK
J.C. WILLIAMSON
JOHN YURONKA

ABO PETROLEUM CORP.
ACE OIL CO.
ADAMS EXPLORATION CO.
ADOBE EXPLORATION CO.
ALPHA 21 PRODUCTION CO.
AMCO PRODUCTION CO.

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
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MAILING LIST

MINERAL AND ENERGY INTERESTS

AMERICAN OIL CO.	
AMERICAN PETROFINA CO. OF TEX.	
AMERICAN QUASAR PETROLEUM CO.	JESS B. NUNNELER
AMMEX PETROLEUM CO.	
AMOCO PRODUCTION CO.	ROBERTA L. ANDERSEN PETE MCRAE
ANADARKO PRODUCTION CO.	
ANTWEIL OIL CO.	MORRIS R. ANTWEIL
APACHE CORP.	
APOLLO ENERGY INC.	
ARROWHEAD OIL CORP.	
ASSOC. OF MOUNTAIN STATES INDEPEND. PETROLEUM OPERATORS	
ATLANTIC RICHFIELD	KATHRYN DICKENS
AUSTIN GAS PURCHASING INC.	
BABER WELL SERVICING CO.	
BARBER OIL INC.	ROBERT S. LIGHT
BASS ENTERPRISES PROD. CO.	J.E. PULLIG
BEACH EXPLORATION INC.	CARL C. BEACH WILLIAM N. BEACH
BEARD OIL CO.	WILLIAM M. BEARD
BEL DYN INC.	
BELNORTH PETROLEUM CORP.	
BHP PETROLEUM (AMERICAS) INC.	
BILL G. ISLER OIL CO.	BILL G. ISLER
BLISS PETROLEUM INC.	PAUL D. BLISS
BOYD OPERATING CO.	TOM M. BOYD
BRECK OPERATING CORP.	FRED F. DUESER
BURK ROYALTY CO.	FRED M. LYNCH
BURNETT OIL CO. INC.	RAYFORD STARKEY
C & K PETROLEUM INC.	
C&C OPERATING CORP.	JOE A. COLEMAN
CARTER FOUNDATION PROD.	
CHALLENGER ENERGY INC.	
CHAMA PRODUCTION CO.	
CHAMPLIN PETROLEUM CO.	JAMES M. TAYLOR
CHAVEROO OPERATING CO.	
CHEVRON OIL CO.	
CIBOLA ENERGY CORP.	
CIMARRON ENERGY CORP.	
CITIES SERVICE OIL CO.	ELMER W. STARTZ
COASTAL OIL & GAS CORP.	

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

MINERAL AND ENERGY INTERESTS

COLEMAN OIL & GAS INC.	GEORGE E. COLEMAN
COLLIER & COLLIER	
COLLIER ENERGY INC.	
CONOCO INC.	CHRIS FUING HUGH A. INGRAM
CONQUEST EXPLORATION CO.	
CONSOLIDATION COAL CO.	KENT M. REDDING
CONTINENTAL GROUP INC.	
COQUINA OIL CORP.	KEVIN MCCARTHY
CULBERSON & IRWIN	
DALPORT OIL CORP.	LEON M. LAMPERT
DAMSON OIL CO.	
DELTA US CORP.	
DENTON OIL CO.	
DEPCO INC.	LANDS DEPT.
DESANA CORP.	
DIAMONDBACK PETROLEUM INC.	
DINERO OPERATING CO.	LAVONDA NORMAN
DISCOVERY OPERATING INC.	
DIXON & YATES OIL CO.	
DORCHESTER EXPLORATION INC.	
DURHAM INC.	KEVIN D. DURHAM
DYAD ASSOCIATES	
EAGLE OIL & GAS CO.	WARREN T. AYRES
EL PASO EXPLORATION CO.	
EL PASO NATURAL GAS CO.	JAMES F. GEORGE JOHN A. SPROUL
EL RAN INC.	ROBERT R. RANCK
EMCOR PETROLEUM INC.	
ENSOURCE INC.	
EQUITABLE PETROLEUM CORP.	
ESTORIL PRODUCING CORP.	
EXXON CORP.	MELBA C. KNIPLING
FIRO CORP.	TOMMY L. McDONALD
FLORIDA EXPLORATION CO.	
FORD-CHAPMAN & ASSOC.	
FOREE COMPANY	R.L. FOREE
FORISTER PUMPING SERVICE	
FORISTER-SWEATT OIL CO.	
FROSTMAN OIL CORP.	
FULLER PETROLEUM INC.	C. W. DOWNEY, JR.

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

MINERAL AND ENERGY INTERESTS

GAELIC PETROLEUM CO.	
GARRETT ENERGY	
GAS LIFT SALES & SERVICE INC.	
GENERAL OPERATING CO.	
GETTY OIL CO.	HARVEY O. WOODS, JR.
GMC CO.	
GRACE ENERGY	
GREAT WESTERN DRILL CO.	PAT L. SHANAHAN
GRSJ PETROLEUM	
GSI	
GULF OIL CORP.	DR. DAVID R. LEMASTER RAY VADEN
H&S OIL CO.	
H.L. BROWN JR. OIL CO.	JEAN MILLS
HAMON OIL CO.	
HANAGAN PETROLEUM CORP.	HUGH E. HANAGAN
HANSON ENERGY	WARREN HANSON
HANSON OIL CORP.	
HARPER OIL CO.	CAL GREEN
HARRIS PETROLEUM CONSULTANTS	
HARVARD PETROLEUM CORP.	
HARVEY E. YATES CO.	
HE PRINCE OIL CO.	H.E. PRINCE
HIGHLAND PRODUCTION	
HILLIARD OIL & GAS INC.	
HILLIN PRODUCTION CO.	
HLW EXPLORATION INC.	
HNG OIL CO.	W. R. LEWIS
HOLLY ENERGY INC.	ROBERT H. LOYD
HONDO DRILLING	
HONDO OIL & GAS CO.	
HONEYSUCKLE EXPLORATION CORP.	
HOWELL PETROLEUM CORP.	
HUDSON & HUDSON	RALPH L. GRAY
I & W INC.	
INEXCO OIL CO.	MAX R. AMES
INTERNORTH INC.	
J.D.R. LIMITED OIL CO.	
JACK PLEMONS OIL CO.	JACK PLEMONS
JAKE L. HARMON OIL CO.	S.J. LADAS
JEM RESOURCES INC.	JOE B. BELL

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

MINERAL AND ENERGY INTERESTS

JOHN H. TRIGG OIL CO.	JOHN H. TRIGG
JUBILEE ENERGY CORP. AND	TEMPO ENERGY CORP.
KAISER & FRANCIS OIL CO.	
KEITH COLLINS PETROLEUM CO.	
KENNEDY OIL CO.	
KERSEY & DONOHUE	
KIMBALL PRODUCTION CO.	
KIMBELL OIL CO. OF TEXAS	
KINCAID & WATSON DRILLING CO.	NANCY KING
KINCHELOR	
KOEHANE & SANDERS	
LADD PETROLEUM CORP.	J. R. MYERS
	CLYDE PHILLIPS
LARUE & MUNCY	BERT N. MUNCY, JR.
LIBERTY OIL & GAS	
LUCILLE F. MCKINLEY OIL CO	LUCILLE F. MCKINLEY
LYCO ENERGY CORP.	
LYNX PETROLEUM CONSULTANTS INC	
M & G OIL INC.	
MADDOX ENERGY CORP.	BRAD MANTZ
MARALO INC.	RICHARD A. LOWERY
MARATHON OIL CO.	NED McDANIELS
MARBOB ENERGY CORP.	RON HEAD
MARLINE PETROLEUM CORP.	TED J. BOSTON
MATADOR PIPELINES INC.	RIGHTS-OF-WAY DEPT.
MAX WILSON INC.	MAX WILSON
MAYNE & MERTZ INC.	
MCCLELLAN OIL CORP.	MARK H. MCCLELLAN
MCKAY OIL CORP.	
MEADCO PROPERTIES LTD.	
MEWBOURNE OIL CO.	
MILLARD DECK OIL CO.	
MIRANDA ENERGY CORP.	
MISSISSIPPI CHEMICAL CORP.	TILLMAN BRANCH
MITCHELL ENERGY CORP.	MORRIS HOWELL
MOBIL OIL CORP.	
MONSANTO OIL CO.	
MORAN EXPLORATION INC.	
MORANCE	
MOROIL COMPANY INC.	
MOUNTAIN STATES PETROLEUM CO.	

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

MINERAL AND ENERGY INTERESTS

MURCHISON & CLOSUIT	
MWJ PRODUCING CO.	
NAPECO INC.	
NAVAJO PIPELINE CORP.	
NEW TEX OIL CO.	
NORTEX OIL CO.	
NORTH AMERICAN ROYALTIES INC.	
NRM PETROLEUM CORP.	
OIL REPORTS & GAS SERVICES	DONNA HOLLER
O'NEILL PROPERTIES LTD.	
P-M DRILLING CO.	A.G. McCARVER
PACE EXPLORATION INC.	H. W. PACE
PECOS VALLEY OIL INDUSTRIES	
PENNZOIL CO.	
PETRO LEWIS	
PETROLEUM CORP. OF DELAWARE	
PETROLEUM DEVELOPMENT CORP.	JAMES C. JOHNSON
PHILLIPS PETROLEUM CO.	P. KENT CRAWFORD LENDELL HAWKINS
PIONEER PRODUCTION CORP.	
POGO PRODUCING CO.	JERRY A. COOPER GINA GRESHAM
POINT PETROLEUM	
POOL OIL CO.	FRED F. POOL III
POST PETROLEUM CO. INC.	
POTASH CO. OF AMERICA	
POTASH PRODUCERS INC.	
PREMIER PRODUCTION CO.	
R & G WESTALL OIL CO.	RAY WESTALL
R. Q. SILVERTHORNE	NANCY KING
RAULT RESOURCES INC.	
RDC INC.	
READ & STEVENS INC.	JOE M. WIGLEY
RHONDA OPERATING CO.	HOWARD S. DAVIS
ROBINSON RESOURCE DEV. CO.	
S & J OPERATING CO.	
SAMEDAN OIL CORP.	
SANDERS PETROLEUM CORP.	CHARLES W. SANDERS
SANTA FE ENERGY CO.	
SANTE FE EXPLORATION	
SHELL PIPELINE CORP.	

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

MINERAL AND ENERGY INTERESTS

SIETE OIL & GAS	
SOUTHERN UNION CO.	MARTIN BOGGS
SOUTHERN UNION GAS CO.	
SOUTHLAND ROYALTY CO.	DENNIS E. SLEDGE
STALLWORTH OIL & GAS INC.	
STANFORD NAT. RESOURCES GROUP	S & J OPERATING CO.
STEVENS OPERATING CORP.	JOHN V. WALKER
SUN EXPLORATION & PROD. CO.	JOHN CROWDER
SUNDANCE OIL CO.	A.R. HERMANSON
	ARMAND I. SANDON
SUPERIOR OIL	MIDLAND PROD. DIST.
T. B. KNOX ESTATE	
TENNECO OIL CO.	Y. H. MIZE
TEXACO INC.	LAND MANAGER
TEXACO USA	
TEXAS AMERICAN OIL CORP.	
TEXAS INTERNATIONAL CO.	
TEXAS OIL & GAS CORP.	
TEXAS WEST OIL & GAS CORP.	
TEXAS-NEW MEXICO PIPELINE CO.	
THE EASTLAND OIL CO.	MARK H. INGRAM
THE MAURICE C. BROWN CO.	
TIPPERARY OIL & GAS CORP.	
TOWNER PETROLEUM CO.	
TRANSWESTERN PIPELINE CO.	JAMES SKELLETT
TXO PRODUCTION CORP.	D. HUNDLEY
U.S. BORAX	MICHAEL H. RAUSCHKOLB
UNION OIL OF CALIF.	LAND MANAGER
UNITED SALT CORP.	
URIAH EXPLORATION	
VIKING PETROLEUM INC.	EDWARD V. ROBERTS, JR.
W.A. MONCRIEF JR. OIL CO.	W.A. MONCRIEF, JR.
W.E. HENDEN JR. OIL CO.	ROBBIE O'DONNELL
WALLEN PRODUCTION CO.	
WEST TEXAS OIL REPORTS	
WESTERN RESERVES OIL CO.	
WILLIAM G. MCCOY OIL CO.	WILLIAM G. MCCOY
WOOD & LOCKER INC	
WORTH PETROLEUM CO.	
YATES ENERGY CORP.	
YATES PETROLEUM CORP.	R.G. PATTERSON

TABLE 5-4
ROSWELL DISTRICT - CARLSBAD RESOURCE AREA
RESOURCE MANAGEMENT PLAN
MAILING LIST

RECREATION GROUPS

COTTONWOOD GUN CLUB
DESERT ROUGH RIDERS
EDDY COUNTY SEARCH AND RESCUE
FREEWHEEL M/C
MESILLA VALLEY GROTTO
NATIONAL SPELEOLOGICAL SOC.

PECOS VALLEY GROTTO
SENM SEARCH & RESCUE

JESS MCGARY
M. BANISTER
PERRY DENTON
MIKE L. ATWOOD
STEVE PEERMAN
JOLI EATON
ROBERT R. STITT
CAROL BELSKI
ROY BURKHAM

UTILITY COMPANIES

ELECTRIC COOP.
GAS COMPANY OF NEW MEXICO
LEA COUNTY ELECTRIC COOP
MOUNTAIN BELL REAL ESTATE
OTERO COUNTY ELECTRIC COOP
PENASCO VALLEY TELEPHONE COOP
PLAINS ELECTRIC
PUBLIC SERVICE CO. OF NM
SPS CO.

CENTRAL VALLEY
WILLIAM R. DETRICK
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APPENDIX

A

APPENDIX A

SUMMARY OF PREVIOUS MANAGEMENT FRAMEWORK PLAN DECISIONS

Introduction

Appendix A summarizes the decisions that will be brought forward as current management guidance. Three previous land-use planning documents, called Management Framework Plans (MFP), contain planning decisions still in effect until completion of the Carlsbad Resource Management Plan. These include the East Eddy Lea MFP (1980), the Caverns MFP (1974), and the Box Canyon MFP (1975). A technical report was completed during the summer of 1985 evaluating each decision and determining which decisions were still applicable and appropriate for inclusion in the RMP. Each decision was either carried forth, modified, or dropped. Some decisions were completed; some were outdated due to changes in law or policy; and others were not land allocation decisions according to current land use planning guidelines.

The technical report analyzing all previous decisions is available for review at the Carlsbad Resource Area (CRA) office. The following decisions are still applicable and have been carried forth or modified. These are found under actions common to all alternatives, Alternative A (current management) and/or carried forth to varying degrees in the other alternatives. A summary of these decisions are listed in the following table.

Resources	Decision Number	Summary
East Eddy Lea MFP		
Lands	L-1.3	Allow for the disposal of lands in the Loco Hills area if necessary for community expansion. This decision will be modified in the RMP to sell 55 acres.
Lands	L-1.4	Dispose of 4,000 acres east of Carlsbad for industrial development.
Lands	L-3.1	Modify decisions to maintain DOE land uses in the Waste Isolation Pilot Project (WIPP) withdrawal site with an added total withdrawal of 16 sections.
Lands	L-4.1	Dispose of 800 acres on scattered tracts in northeast Lea County.
Lands	L-6.1	Designate rights-of-way corridors (one mile wide) following existing major rights-of-way, in four separate segments, totalling 150 miles.
Lands	L-10.1	Dispose of seven scattered tracts in east Lea County.

Resources	Decision Number	Summary
Minerals	M-1.1	Continue to process oil and gas lease applications except within WIPP withdrawal. No surface Occupancy (NSO) on areas nominated for the National Register of Historic Places (portions of Laquana Plata and Maroon Cliffs). This decision will be modified in Alternatives B through D to include protection of additional special management areas (SMA).
Minerals	M-1.2	Continue to process oil and gas drilling permits and seismic applications for areas throughout the planning unit. NSO on sites nominated to the National Register of Historic Places. Restrictions and/or special stipulations in Secretary's oil-potash area of 11/5/75 and environmental senstive areas. This decision will be modified in Alternatives B through D to protect additional SMAs.
Minerals	M-1.3	Protect identified Economic Reserve Areas for oil and gas development except lands withdrawn for WIPP, lands within the Secretary's oil-potash area of 11/5/75, and lands nominated for the National Register of Historic Places. Stipulations and restrictions protecting environmental quality will be applied.
Minerals	M-1.4	Obtain legal public access easements where necessary in oil and gas Economic Reserve Areas.
Minerals	M-4.1	Continue to sell caliche throughout the planning area; new pit locations will be determined on demand and feasibility of distance to transport materials. Archeological clearances will be conducted as required on all proposed sites. Rehabilitation measures will be applied to all exhausted or abandoned sites. This decision will be modified to exclude caliche sales in sensitive environmental areas.
Minerals	M-4.2	Continue to sell sand and gravel in areas identified as Economic Reserves or Sub-Economic Resources.
Range[1]	RM-1.1	Allow any season use, adjust livestock stocking rates.

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[1] All range decisions for East Eddy/Lea Planning Unit have been carried forth and have not been changed in the RMP. Consequently, even though some decisions may not appear appropriate under current guidance, they have not been altered.

Resources	Decision Number	Summary
Range	RM-1.2	Perform vegetative treatments and develop intensive grazing systems on existing Allotment Management Plan areas.
Range	RM-1.3	Employ intensive supervision on all allotments during development of grazing systems.
Range	RM-1.4	Perform vegetative treatments and develop intensive grazing systems on areas without allotment management plans.
Range	RM-1.5	Rehabilitate abandoned mining areas.
Range	RM-2.1	Designate certain lands for disposal.
Range	RM-2.2	Designate certain lands for exchange within allotments.
Range	RM-2.3	Provide cattleguards at problem gates.
Range	RM-2.4	Secure legal access on certain areas.
Range	RM-2.5	Readjust Grazing District Boundary.
Range	RM-3.1	Maintain existing grazing management levels on certain allotments.
Range	RM-4.1	Predator damage control will be allowed where need is verified.
Range	RM-4.2	Place signs in problem livestock watering areas.
Range	RM-4.3	Control materials toxic to livestock.
Range	RM-4.4	Close Laguna Plata and Maroon Cliffs Archaeological Areas and Pierce Canyon to off-road vehicle (ORV) use.
Watershed	W-1.1, 2.1	Apply mesquite control in needed areas with adequate provisions for wildlife values.
Watershed	W-1.2, 2.2	Apply grazing systems to meet multiple-use objectives.
Watershed	W-1.4., 2.4	Rehabilitate unnecessary roads.
Watershed	W-1.5, 2.5	Close Laguna Plata and Maroon Cliffs to ORV use.
Wildlife	WL-1.4 & 3.4	Reduce mesquite and creosote canopy.

Resources	Decision Number	Summary
Wildlife	WL-1.18, 2.6, & 5.5	Maintain mixed desert shrub aspects. Do not allow brush control in these areas.
Wildlife	WL-1.24 & 4.4	No brush control within 300 feet of canyons, cliffs, and escarpments. Minimize surface disturbance.
Wildlife	WL-1.25 & 1.37	Establish suitable buffer zone around trees to protect raptor nesting sites.
Wildlife	WL-1.31 & 6.3	Maintain vegetation and wetland conditions around playas, alkali lakes, and sinks.
Wildlife	WL-2.1	Ensure adequate wildlife waters.
Wildlife	WL-5.3	Develop and/or protect cover around livestock and wildlife waters.
Recreation	R-1.1 & 3.1	Develop an overnight, day-use, and small boat launching site on the Pecos River (Red Bluff Reservoir).
Recreation	R-1.4 & 2.2	Provide physical and legal access to certain lands. Original decisions would be modified to identify priority tracts for access acquisition.
Recreation	R-4.1 & 4.2	Complete nomination of Pope's Wells, Pope's Campsite, and Potash Discovery Well to the National Register of Historic Places.
Recreation	R-5.1 & 7.2	Permit ORV use on all public lands except Laguna Plata, Pierce Canyon, Pope's Well and Campsite and portions of Maroon Cliffs. This decision will be modified to add ORV restrictions on additional SMA's in Alternatives B-D.
Recreation	R-7.1, 8.1, & 9.1	Various Visual Resource Management (VRM) Standards are to be used in certain areas to prevent damage or the threat of damage. Original decisions would be modified to meet revised VRM policy.
Access	A-1.2, A-1.3, A-1.4	Identify access needs for additional legal and physical access as well as rehabilitation of excess roads. Original decisions would be modified to legal descriptions and instead evaluate needs on an access tract basis.
Fire	F-1.1	Suppress hazardous wildfires.

Resources	Decision Number	Summary
Fire	F-2.1	Use prescribed burns to improve forage in certain areas.
Fire	F-1.5	Maintain shortgrass areas by either suppression or let burn depending on precipitation.
Archaeology	AR-1.4, AR-3.2 Maroon Cliffs	Nominate to the National Register of Historic Places.
		Restrict ORV use to designated existing roads and trails.
		Complete an archaeological survey of the area.
		No surface occupancy allowed.
Archaeology	AR-1.3, AR-3.1 Laguna Plata	Nominate to the National Register of Historic Places.
		ORV use closed to existing roads and trails.
		Allow continued emergency use as an evaporation pond by National Potash Corporation (NPC) only.
		Prohibit slurrying of potash tailings into Laguna Plata proper.
		Complete an archaeological survey of the area.
CAVERNS MFP		
Lands	A-2	Maintain Federal ownership of lands in this area except for possible future disposal around Whites City if needed for community expansion.
Lands	A-3	Modify original decision requiring stricter controls on rights-of-way issued in area and adherence of electrical transmission lines to meet District Oil and Gas Environmental Assessment Record (EAR) standards. Avoidance areas within SMAs would be imposed as well as strict compliance with visual management class objectives.
Lands	A-4-a	Develop corridors for oil and gas pipelines and electrical transmission lines.

Resources	Decision Number	Summary
Lands	A-4-f Also Recreation R2b, R4C	Solidify Federal ownership patterns through exchange, expecially along the north boundary of Carlsbad National Park and the east boundary of Lincoln National Forest.
Minerals	TI & T2	Accept original decision to implement planning for orderly development of the planning unit for oil and gas exploration and/or production to extent possible. Include delineation of ROW avoidance areas, corridor designations, and special oil and gas lease and access prescriptions to minimize resource damage.
Minerals	Unit-wide I	Determine where mineral material sites (primarily caliche) would be detrimental to other resources and do not authorize sites in these areas.
Minerals, Watershed, and Wildlife	2 7 (several)	Minimize modification of riparian habitat areas.
Minerals	R-3 a + b R-A a + b	Establish access priorities to acquire important physical and legal access as well as elimination of unnecessary, environmentally disruptive access roads (modification of original decision).
Watershed	I	Control undesirable brush.
Wildlife	Mule Deer (several) #s	Protect mule deer habitat by ensuring that livestock grazing management, vegetation manipulation projects, etc. protect or enhance desert shrub communities, mountain shrub communities and forbs and legumes. Ensure adequate yearlong wildlife waters. Original decisions will be modified to reflect these overall objectives.
Wildlife	Mule Deer 5C	Ensure continued adequate hunter access.
Wildlife	Mourning Dove 2 + Waterfowl I Painted Bunting I	Protect existing wooded riparian vegetation and stream habitat.

Resources	Decision Number	Summary
Wildlife	Birds of Prey 1	Provide adequate stipulations (i.e., seasonal drilling restrictions, buffer zones around nest sites from vegetative manipulations, etc.) to protect raptor nesting areas (slight modification of original decision).
Livestock Forage Watershed	1 6	Implement grazing management on all allotments to meet plant phenological requirements, etc.
Livestock Forage	7	Develop prescribed burning prescriptions by plant species for suitable areas (slight modification of original decision).
Recreation	R-2C	Maintain Lonesome Ridge Area in pristine condition.
Recreation	R-3 a + b R-A a + b	Establish access priorities to acquire important physical and legal access as well as eliminating unnecessary, environmentally disruptive access roads (slight modification of original decision).
Recreation	R5-a	Continue inventory and evaluation of caves. Decision will be expanded to provide adequate protection for important cave resources.
Recreation	R5-b	Protect significant caves by limiting surface uses such as oil and gas development and ORV use which degrade cave resources. This decision will be modified and expanded in Alternatives B through D to provide specific protective management for identified important cave resources. Special protective stipulations for all caves within the primary cave occurrence zone will also be required.
Box Canyon MFP		
Lands	ROW 1	Establish an east-west right-of-way corridor along the existing 345 KV transmission line running westward from Artesia.
Lands	L.P.-1	Protect viewshed along State Highway 137. This decision will be expanded to provide VRM objectives and protective measures to meet those objectives for all areas.
Range Recreation	2 ORV-001	Keep area open to ORV use. This decision would be modified in Alternative A to include closure of the Seven Rivers Hills Gyp Buckwheat Threatended and Endangered (T&E) habitat and in Alternatives B-D to include restrictions within SMAs and other sensitive areas.

Resources	Decision Number	Summary
Watershed	2	Implement grazing management practices.
Watershed	3	Control undesirable brush.
Wildlife	Mule Deer (several #s)	Protect mule deer habitat by ensuring that livestock grazing management, vegetative manipulation projects, oil and gas development, do not damage desert shrub communities. Ensure adequate yearlong wildlife waters. Original decisions will be modified to reflect these overall objectives.
Wildlife (mule deer)	Mule Deer 10 + 11 Waterfowl	Protect existing riparian habitat, surface water acreage, and stream habitat.
Wildlife	Birds of Prey	Protect nesting areas of certain birds of prey (Bald eagle, peregrine & prairie falcons, etc.). Decision will be expanded to provide stipulations to protect nesting areas of all birds of prey.
Recreation	Area I	Designate several caves as recreation lands. This decision will be modified to include all the caves as part of a cave resource special recreation management area (SRMA).

APPENDIX

B

APPENDIX B-1
FLOWCHART FOR LAND SALES

LAND USE PLAN

Identify tracts potentially suitable for disposal. Tracts must meet one of three criteria.

CRITERIA 1

Tract is difficult and uneconomical to manage. It is also unsuitable for management by another Federal department or agency.

or

CRITERIA 2

Tract was acquired for specific purpose for which it is no longer needed and it is not needed for any other Federal purpose.

or

CRITERIA 3

Disposal of tract will serve public objectives such as community expansion and economic development which outweigh any public objectives served by retaining in Federal ownership.

ENVIRONMENTAL ANALYSIS PROCESS

If tract is less than or equal to 2,500 acres[a], impacts to existing resources, such as minerals[b] (based on mineral potential report), wildlife, recreation, range, cultural, wilderness values, floodplains, paleontological values, visual resources, Area of Critical Environmental Concern (ACEC), wetlands, T & E species and habitats, and social and economic conditions will be considered in a site-specific environmental assessment and land report. After this process is complete, the Area Manager will decide whether to offer the tract for sale, generally based upon recommendations given in the land report.

APPRAISAL

Determination of fair market value.

COMPETITIVE SALE or MODIFIED COMPETITIVE SALE or DIRECT SALE

Sources: Federal Land Policy and Management Act (FLPMA) (Public Law 94-579).
Existing Bureau of Land Management (BLM) Policy.

Notes:

[a] If the tract is greater than 2,500 acres, procedures must be followed as outlined in FLPMA Section 203(c).

[b] Existing BLM policy, as promulgated in Washington Office Instruction memorandum No. 82-359.

[c] These types of sales may be used when necessary to: (1) assure equitable distribution of lands among purchasers and (2) recognize equitable considerations of public policies.

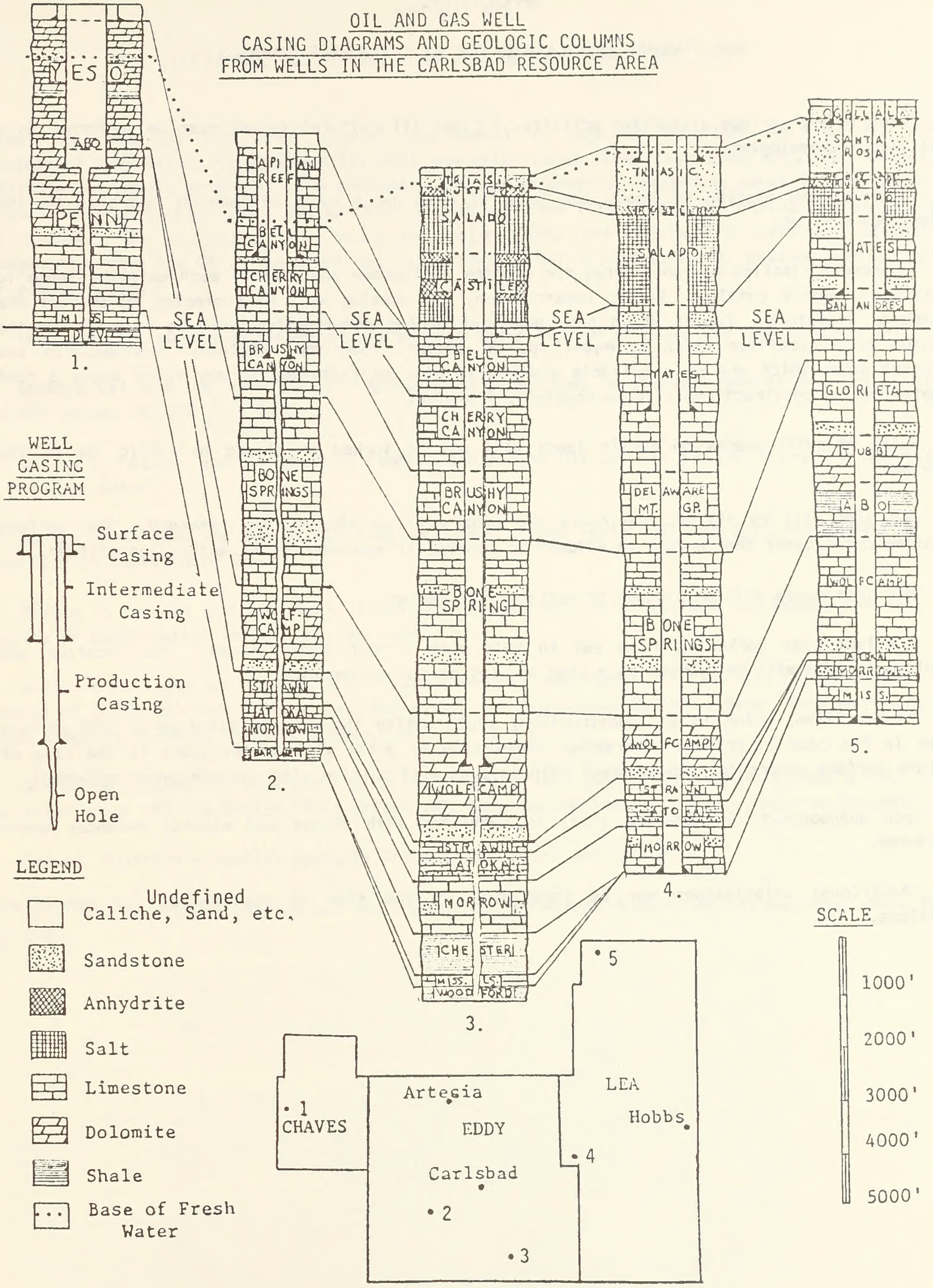
APPENDIX B-2
PENDING WITHDRAWAL REVIEW

SO or EO PLO No.	Purpose of Withdrawal	Agency Type	Status
EO 2/11/18	Public Water Reserve No. 53	BLM	In Washington
EO 6/21/35	Public Water Reserve No. 107	BLM	In Washington
EO 6/22/35	Public Water Reserve No. 107	BLM	In Washington
EO 11/7/35	Public Water Reserve No. 107	BLM	In Washington
EO 1/16/40	Public Water Reserve No. 107	BLM	In Washington
EO 6797	Potash Reserve 7-27-1934	BLM	
PLO 569	Potash Reserve 3-2-1949	BLM	
PLO 2526	Gnome 10-26-1961	DOE	Case in Carlsbad
EO NM-1	Potash Reserve No. 6 3-11-1926	BLM	To Washington
EO NM-2	Potash Reserve No. 7 6-8-1929	BLM	To Washington
PLO 5115 (NM17995)	Carlsbad Zoo-Bio Park 9-10-1971	BLM	Case in Roswell
EO 2724	Rifle Range NM Infantry 10-6-1971	DOD	Case in Roswell
FPC-0 8/20/34	Power Project	FERC	Awaiting FERC Justification
EO 2/1/13	Power Project No. 574	FERC	Revoked by PLO 5/65
PLO 4078	Cave Protection (FS) NM-0559461	USDA	Awaiting FS Justification
SO 4/12/16	Carlsbad Project - Irr. Farm Lands	BR	To Washington
SO 3/18/14	Carlsbad Project - Ditch Riders Quarters	BR	Awaiting Adjudication
SO 4/14/03	Pecos River	BR	Awaiting BR Justification
SO 1/25/06	Reservoir No. 1 - McMillan, Reservoir No. 2 - Avalon	BR	Awaiting BR Justification
NM 9508	Water Project	BR	Awaiting BR Justification
SO 5/6/08	Carlsbad Project	BR	Awaiting BR Justification
SO 10/19/12	Carlsbad Project - McMillan	BR	Awaiting Adjudication
SO 11/14/12	Carlsbad Project - McMillan	BR	Closed - Patented
SO 5/25/28	Carlsbad Project	BR	To Washington
SO 12/10/28	Carlsbad Project - Avalon	BR	Awaiting BR Justification
SO 12/22/28	Carlsbad Project - Avalon	BR	To Washington
Wdl App NM56900	Carlsbad Project - Little Walt Canyon Quarry	BR	In Washington
PLO 6403	WIPP	DOE	In Washington

APPENDIX

C

OIL AND GAS WELL CASING DIAGRAMS AND GEOLOGIC COLUMNS FROM WELLS IN THE CARLSBAD RESOURCE AREA


YESO
ABO
PENN
MISS
DEV
1.
SEA LEVEL
CAPITAN REEF
BELL CANYON
CHERRY CANYON
BRUSHY CANYON
BONE SPRINGS
WOLFCAMP
STRAWN
ATOKA
MORROW
BARNETT
2.
SEA LEVEL
TRIASSIC
RUSTLER
SALADO
CASTILE
BELL CANYON
CHERRY CANYON
BRUSHY CANYON
BONE SPRING
WOLFCAMP
STRAWN
ATOKA
MORROW
CHESTER
MISS. LS.
WOODFORD
3.
SEA LEVEL
TRIASSIC
RUSTLER
SALADO
YATES
DELAWARE MT. GP.
BONE SPRINGS
WOLFCAMP
STRAWN
ATOKA
MORROW
4.
SEA LEVEL
OGALLALA
SANTA ROSA
DOCKUM
RUSTLER
SALADO
YATES
SAN ANDRES
GLORIETA
TUBB
ABO
WOLFCAMP
ATOKA
MORROW
MISS.
5.
WELL CASING PROGRAM
Surface Casing
Intermediate Casing
Production Casing
Open Hole
LEGEND
Undefined Caliche, Sand, etc.
Sandstone
Anhydrite
Salt
Limestone
Dolomite
Shale
Base of Fresh Water
SCALE
1000'
2000'
3000'
4000'
5000'
1
CHAVES
Artesia
EDDY
LEA
Hobbs
4
Carlsbad
2
3
5

Well Locations

APPENDIX C-2

BLM STANDARD STIPULATIONS FOR SOLID LEASABLE MINERALS

1. Prior to any surface disturbing activity, a Class III cultural survey must be performed by a qualified archaeologist.

2. Clearing and blading of roads and pads will be held to a minimum as approved by the authorized officer.

3. To prevent slacking of fence wire, the grantee will brace and tie-off each existing fence to be crossed, before cutting. During construction, the opening will be protected to prevent the escape of livestock. Fences which have been cut during construction will be restored by the grantee to a condition which is equal to, or better, than the original. Cattleguards and adjacent gates which are of a suitable width will also be installed in any fence where a road created during construction is to be regularly traveled.

4. Gates or cattleguards on public lands will not be locked or closed to public use by the grantee.

5. Mud pits will be filled, the roads and pads will be ripped, and reseeded. The surface allottee can request that a road be allowed to remain, if approved by the authorized officer.

6. Core test holes will be plugged to surface with cement.

7. A 4-inch pipe marker will be set in hole with 5 feet above ground. The location and permittee's name will be stamped on a disc and set on the marker pipe.

8. The permittee, prior to any construction, shall notify the grazing allottee or the surface owner in the case of private ownership. Permission to drill will be necessary in the case of private surface ownership. Abandonment stipulations will coicide with surface owner agreement.

9. Upon abandonment, a lithe-log shall be submitted with assays and mineral balances where warranted.

10. Additional stipulations may be formulated at the time of application for specified locations.

APPENDIX C-3

LIST OF OIL AND GAS AND OTHER MINERAL PROCEDURES, NTL, ETC.

Because oil and gas and other mineral development is such an important part of the CRA development activities, it is essential that operating regulations, policies, etc., are readily available for public scrutiny. The tremendous volume of material available makes it impractical to include in this draft EIS. The material is, however, on file in the CRA office and available for review. The following list shows the major rules and regulations governing minerals management within the CRA. These notices to lessees (NTLs) are periodically revised and put out for public review.

1. Procedure for obtaining a Federal oil and gas lease and for drilling and completing a well.

2. Onshore Oil and Gas Order No. 1 - Approval of Operations on Onshore Federal and Indian Oil and Gas Leases (43 CFR Part 3160).

3. Notice to Lessees and Operators of Federal and Indian Oil and Gas Leases (NTL-2B) - Disposal of Produced Water.

4. Notice to Lessees and Operators of Onshore Federal and Indian Oil and Gas Leases (NTL-3A) - Reporting of Undesirable Events.

5. Notice to Lessees and Operators of Onshore Federal and Indian Oil and Gas Leases (NTL-4A) - Royalty or Compensation for Oil and Gas Lost.

6. Notice ot Lessees and Operators of Onshore Federal and Indian Oil and Gas Leases (NTL-7) - Removal of Crude Oil from Federal and Indian Oil and Gas Leases by Means Other than an Approved Lease Automatic Custody Transfer System.

7. Notice to Lessees and Operators of Onshore Federal and Indian Oil and Gas Leases Within the Jurisdiction of the New Mexico State Office (NTL 85-1 New Mexico) - Cultural Resource Surveys.

8. Roswell District - Special Approval Stipulations - Oil and Gas.

9. Oil, Gas, and Potash Leasing and Development Within Potash Area - Federal Register, Vol. 40, No. 214.

Office of the Secretary

EDDY AND LEA COUNTIES, NEW MEXICO

Oil, Gas, and Potash Leasing and Development Within Potash Area

For the purpose of revising the rules for concurrent operations in prospecting for, development, and production of oil and gas and potash deposits owned by the United States within the Potash Area and for the purpose of revising the designated Potash Area to which the amended provisions are to be applicable, it is ordered as follows:

I. The Order of the Secretary of the Interior dated February 6, 1939 (4 FR 1012), withholding certain lands in New Mexico from application or lease under the oil and gas provisions of the Mineral Leasing Act of February 25, 1920 (41 Stat. 437), as amended, which Order was revoked by Order of the Secretary of the Interior dated October 16, 1951 (16 FR 10669), shall continue to be revoked. The lands described in said Order dated February 6, 1939 (except the E½SE¼, sec. 24, and the E½E½, W½SE¼, S½SW¼, sec. 25, T. 20 S., R. 29 E., N.M.M., which were withdrawn from all forms of entry by Public Land Order No. 569, 14 FR 1086), which were opened for oil and gas leasing by said Order dated October 16, 1951, shall continue to be open for oil and gas leasing. This Order shall not affect the current status of land with respect to its being withdrawn from, or open for, entry or leasing.

II. Subject to the provisions of I. above, the provisions of the Order of the Secretary of the Interior dated May 11, 1965 (30 FR 6692–93), and the Potash Area designated therein are revised to be as specified herein.

III. *General Provisions—A. Issuance of Oil and Gas Leases.*

The Department of the Interior reaffirms its position that the lease stipulations contained in the Order of May 11, 1965, adequately protect the rights of the oil and gas, and potash lessees and operators.

Therefore, each successful applicant for a noncompetitive oil and gas lease, and any party awarded a competitive lease, for lands included in the designated Potash Area will be required, as a condition to the issuance of such lease, to execute a stipulation to the lease as follows:

1. No wells will be drilled for oil or gas except upon approval of the Area Oil and Gas Supervisor of the Geological Survey, it being understood that drilling will be permitted only in the event that it is satisfactorily established that such drilling will not interfere with the mining and recovery of potash deposits, or the interest of the United States would best be subserved thereby.

2. No wells will be drilled for oil or gas at a location which, in the opinion of the Area Oil and Gas Supervisor, would result in undue waste of potash deposits or constitute a hazard to or unduly interfere with mining operations being conducted for the extraction of potash deposits.

3. When it is determined by the Area Oil and Gas Supervision that unitization is necessary for orderly oil and gas development and proper protection of potash deposits, no well shall be drilled for oil or gas except pursuant to a unit plan approved by the Area Oil and Gas Supervisor.

4. The drilling or the abandonment of any well on said lease shall be done in accordance with applicable oil and gas operaing regulations including such requirements as the Area Oil and Gas Supervisor may prescribe as necessary to prevent the infiltration of oil, gas, or water into formations containing potash deposits or into mines or workings being utilized in the extraction of such deposits.

The Area Oil and Gas Supervisor in any action taken under Part A, items 1, 2, 3, and 4 shall take into consideration the recommendations of the Area Mining Supervisor of the Geological Survey and the applicable conservation rules and regulations of the Oil Conservation Commission of the State of New Mexico.

B. *Renewal or Extension of Oil and Gas Leases.*

As a condition to the granting of any renewal or extension of any existing lease embracing lands included in the designated Potash Area, the lessee will be required to execute a stipulation identical to that specified in Part A, items 1, 2, 3, and 4 hereof.

C. *Potash Leases*

All potash permits and leases hereafter issued or existing potash leases hereafter renewed for Federal lands within the designated Potash Area, shall be subject to a requirement either to be included in the lease or permit or imposed as a stitpulation, to the effect that no mining or exploratory operations will be conducted that, in the opinion of the Area Mining Supervisor, would constitute a hazard to oil or gas production, or that would unreasonably interfere with the orderly development and production under any oil or gas lease issued for the same land.

D. *Minable Reserves.*

1. Each potash lessee will file annually by January 1 with the Area Mining Supervisor a map or maps on which has been delineated the following information with respect to the Federal potash leases which it then holds:

a. The areas where active mining operations are now in progress on one or more ore zones.

b. The areas where mining operations have been completed on one or more ore zones.

c. The presently unmined areas which are considered to contain a minable reserve in one or more ore zones, i.e., those areas (enclaves) where potash ore is known to exist in sufficient thickness and quality to be minable under present day technology and economics.

d. The areas within these enclaves which are believed to be barren of commercial ore.

The Area Geologist of the Geological Survey, in consultation with the Area Mining Supervisor, will review the information submitted in this regard and make any revisions in the boundaries of the proposed minable reserves (potash enclaves) which are consistent with the data available at the time of such analyses. The Area Geologist and Area Mining Supervisor will commit their initial findings to a map or maps of suitable scale and will thereafter revise that map or maps as necessary to reflect the latest available information.

E. *Oil and Gas Drilling.*

1. It will be departmental policy to deny approval of most applications for permits to drill oil and gas tests from surface locations within the potash enclaves established in accordance with Part D, item 1 hereof. Two exceptions to this policy will be permitted under the following conditions:

a. Drilling of vertical or directional holes will be allowed to take place from barren areas within the potash enclaves when the Area Mining Supervisor determines that such operations will not adversely affect active or planned mining operations in the immediate vicinity of the proposed drillsite.

b. Drilling of vertical or directional holes will be permitted to take place from a drilling island located within a potash enclave when: (1) there are no barren areas within the enclave or drilling is not permitted on the established barren area(s) within the enclave because of interference with mining operations; (2) the objective oil and gas formation beneath the lease cannot be reached by a well which is vertically or directionally drilled from any permitted location within the barren area(s); or, (3) in the opinion of the Area Oil and Gas Supervisor, the target formation beneath a remote interior lease cannot be reached by a well directionally drilled from a surface location outside the potash enclave. Under these circumstances, the Area Mining Supervisor will, in consultation with the Area Oil and Gas Supervisor, establish an island within the potash enclave from which the drilling of that well and subsequent wells will be permitted. The Area Mining Supervisor in establishing any such island will, consistent with the data supplied by the Area Oil and Gas Supervisor regarding present directional drilling capabilities, select a site which will minimize the loss of potash ore. No island will be established within one mile of any area where approved mining operations will be conducted within three years. To assist the Area Mining Supervisor in this regard, he may require affected potash mining operators to furnish a three-year mining plan.

2. In order to protect the equities between oil and gas lessees while at the same time reducing the number of oil and gas wells which operators propose to drill in the Potash Area, the Area Oil and Gas Supervisor will make greater use of his prerogative to require unitization. Unitization will be mandatory in those cases where completion of the proposed well as a producer would result in the drainage of oil and gas from beneath other Federal lands within a potash enclave. Thus, unitization will be prerequisite to the approval of any well which is (1) located adjacent to an enclave (within a quarter of a mile if an oil test or one-half mile if a gas test) and which is to be drilled vertically to the prospective formation; (2) to be directionally drilled from an adjacent surface location to bottom in a formation beneath an enclave; or, (3) to be vertically or directionally drilled from a barren area or island within an enclave. Any unit plan hereafter approved or prescribed that includes oil and gas leases covered by this notice shall include a provision embodying in substance the requirements set forth in Part A, items 1, 2, 3, and 4 hereof.

3. The Department will cooperate with the New Mexico Oil Conservation Commission (NMOCC) in the implementation of that agency's rules and regulations. In that regard, the Federal potash lessees shall continue to have the right to protest to the NMOCC the drilling of a proposed oil and gas test on Federal lands provided that the location of said well is within the State of New Mexico's "Oil-Potash Area" as that Area is delineated by NMOCC Order 111, as amended. However, the Department will exercise its prerogative to make the final decision of whether to approve the drilling of any proposed well on a Federal oil and gas lease within the Potash Area.

4. Applications for permits to drill vertical tests for oil and gas at locations that are in the Potash Area but outside the State of New Mexico's "Oil-Potash Area" and which do not directly offset an enclave (within a quarter mile of an oil test or within one-half mile if a gas test) will be routinely approved by the Area Oil and Gas Supervisor after review by the Area Mining Supervisor.

F. *Access to Maps and Surveys.*

1. Well records and survey plats that an oil and gas lessee must file pursuant to applicable operating regulations (30 CFR Part 221), shall be available for inspection at the office of the Area Oil and Gas Supervisor, by any party holding a potash permit or lease on the land on which the well is situated insofar as such records are pertinent to the mining and protection of potash deposits.

2. Maps of mine workings and surface installations and records of core analyses that a potash lessee must file pursuant to applicable operation regulations (30 CFR Part 231), shall be available for inspection at the office of the Area Mining Supervisor by any party holding an oil and gas lease on the same land insofar as such maps or records are pertinent to the development and protection of oil and gas deposits.

3. Maps of potash enclaves shall be available for inspection in the office of the Area Geologist, Area Mining Supervisor, and Area Oil and Gas Supervisor. Copies of such maps will be available through local reproduction firms in Roswell, New Mexico.

G. *Definition.*

The word "potash" as used herein shall be deemed to embrace potassium and associated minerals as specified in the Act of February 7, 1927 (44 Stat. 1057).

IV. The lessee of any existing lease in the designated Potash Area may make such land subject to the rules and regulations of Part III. above by filing an election to do so, in duplicate, with the Land Office, Bureau of Land Management, Santa Fe, New Mexico. Except to the extent herein modified, the general regulations contained in 43 CFR Part 3100 (governing the leasing and development of oil and gas deposits) and Part 3500 (governing the leasing and development of potash deposits), shall be applicable to the lands covered hereby.

V. The designated Potash Area is described as follows:

NEW MEXICO PRINCIPAL MERIDIAN

T. 22 S., R. 28 E.,
  Secs. 25 and 36.
T. 23 S., R. 28 E.,
  Sec. 1.
T 19 S., R. 29 E.,
  Secs. 1 and 2;
  Secs. 11 to 15 inclusive;
  Secs. 22 to 26 inclusive;
  Secs. 35 and 36.
T. 20 S., R. 29 E.,
  Secs. 1 and 2;
  Secs. 11 to 15 inclusive;
  Secs. 22 to 27 inclusive;
  Secs. 34 to 36 inclusive.
T. 21 S., R. 29 E.,
  Secs. 1 to 5 inclusive;
  Secs. 10 to 15 inclusive;
  Secs. 22 to 27 inclusive;
  Secs. 34 to 36 inclusive.
T. 22 S., R. 29 E.,
  Secs. 1 to 5 inclusive;
  Secs. 8 to 17 inclusive;
  Secs. 19 to 36 inclusive.

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(continued)

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T. 23 S., R. 29 E.,
  Secs. 1 to 17 inclusive;
  Secs. 21 to 28 inclusive;
  Secs. 33 to 36 inclusive.
T. 24 S., R. 29 E.,
  Secs. 1 to 4 inclusive.
T. 18 S., R. 30 E.,
  Secs. 8 to 17 inclusive;
  Secs. 20 to 29 inclusive;
  Secs. 32 to 36 inclusive.
T. 19 S., R. 30 E.,
T. 20 S., R. 30 E.,
T. 21 S., R. 30 E.,
T. 22 S., R. 30 E.,
T. 23 S., R. 30 E.,
T. 24 S., R. 30 E.,
  Secs. 1 to 18 inclusive.
T. 19 S., R. 31 E.,
  Secs. 31 to 36 inclusive.
T. 20 S., R. 31 E.,
T. 21 S., R. 31 E.,
T. 22 S., R. 31 E.,
T. 23 S., R. 31 E.,
T. 24 S., R. 31 E.,
  Secs. 1 to 18 inclusive.
T. 19 S., R. 32 E.,
  Secs. 25 to 28 inclusive;
  Secs. 31 to 36 inclusive.
T. 20 S., R. 32 E.,
T. 21 S., R. 32 E.,
T. 22 S., R. 32 E.,
  Secs. 1 to 12 inclusive.
T. 19 S., R. 33 E.,
  Secs. 21 to 36 inclusive.
T. 20 S., R. 33 E.,
T. 21 S., R. 33 E.,
T. 22 S., R. 33 E.,
  Secs. 1 to 12 inclusive.
T. 19 S., R. 34 E.,
  Secs. 19 and 20;
  Secs. 29 to 32 inclusive.
T. 20 S., R. 34 E.,
  Secs. 3 to 10 inclusive;
  Secs. 15 to 36 inclusive.
T. 21 S., R. 34 E.,
  Secs. 5 to 8 inclusive;
  Secs. 17 to 20 inclusive;
  Secs. 29 to 32 inclusive.

The area described, including public and nonpublic lands, aggregates 491,915.71 acres, more or less.

VI. This Order shall be effective on November 5, 1975.

KENT FRIZZELL,
Acting Secretary of the Interior.

OCTOBER 7, 1975.

[FR Doc.75-29642 Filed 11-4-75;8:45 am]

APPENDIX

D

APPENDIX D-1

METHODOLOGY USED IN ALLOTMENT CATEGORIZATION

The Range Management Policy of March 1982 (Washington Office Memorandum 82-292) requires BLM to categorize allotments. All allotments are grouped into one of three resource management categories: M-Maintain, I-Improve, C-Custodial. This categorization is designed to facilitate assigning management priorities among allotments.

On February 23, 1982, BLM held a meeting with the Roswell District Grazing Advisory Board to jointly determine the criteria for allotment categorization. The criteria agreed upon by the Grazing Advisory Board, and adopted by the BLM Roswell District follows:

CARLSBAD RESOURCE AREA

Range Categorization Criteria

CATEGORY M (MAINTAIN)	CATEGORY I (IMPROVE)	CATEGORY C (CUSTODIAL)
An allotment must meet conditions 1, 2, & 3, or or 1, 2, & 4 (below)	An allotment must meet any one of the following three conditions:	An allotment must meet all of the following conditions:
1. Has no significant resource conflicts.	1. Has no potential significant resource conflict.	1. Has no significant resource conflict.
2. Has only a moderate potential for improvement in forage production.	2. Has a high potential for improvement in forage production and a range condition rating of 50 or less.	2. Has a low potential for improvement in forage production.
3. Has a range condition rating of 38 to 50 and an improving range trend.	3. Has a range condition rating of 50 or less and a static or declining range trend.	OTHER CONSIDERATIONS Contains less than 30% public land or less than 1,540 acres public land.
4. Has a range condition of 51 or higher and a static or improving range trend.	OTHER CONSIDERATIONS Contains 30% or more public land or more than 1,540 acres public land.	
OTHER CONSIDERATIONS Contains 30% or more public land or more than 1,540 acres public land.		

Note: Any parcel of public land, regardless of size, with an identified significant resource conflict, will qualify for the I category.

According to the category each allotment is placed in, different management actions will be taken. The following is a list of these management actions which could occur by category.

Maintain Category (proposed actions by allotment)

Proposed grazing operations:
- -Normal grazing operation (proper season of use, number and kind of livestock).
- -Increases in livestock grazing use.

Monitoring at intensity needed to detect undesirable changes.
Allowable rangeland improvements.
Cooperative Management Plan (CMP) development.
Standard operating procedures.

Improve Category (proposed actions by allotment or groups of allotments)

Proposals for resolving identified issues and conflicts, including:
Initial stocking levels (season of use, number and kind of livestock).
Constraints on livestock grazing use needed to protect or enhance other resource uses and values.
Production inventories and vegetation or forage allocations needed to resolve conflicts.
Monitoring at intensity needed to help resolve issues and conflicts.

Site-specific rangeland improvements (if known), or typical improvements needed to meet multiple-use objectives.
CMP development proposed.
Standard operating procedures.

Custodial Category (proposed actions by allotment)

Proposed grazing operations:
- -Normal operation (season of use, number and kind of livestock).
- -Licensing on an ephemeral forage basis.
- -Livestock use excluded.

Monitoring at intensity needed to protect existing resource values.
Allowable rangeland improvements.
CMP development proposed.
Standard operating procedures.
Allotment categories will be periodically evaluated, during the 5-year monitoring program, to determine if the allotment characteristics have changed significantly enough to warrant a change in categories.

M and I category allotments will be monitored through the use of rangeland studies designed to detect changes in range condition and trend.

The results will be analyzed at 3-year intervals on the I category allotments and at five-year intervals on the M category allotments. Depending on the results of these studies, it will be determined if the allotment should remain in its present category or be moved to another.

At any time, a significant resource conflict is identified on an M or C category allotment, it will be considered for inclusion in the I category until the conflict is resolved.

BLM will continue to evaluate and make decisions on all actions relating to grazing and rangeland improvements on all allotments, regardless of the category.

APPENDIX D-2

I CATEGORY ALLOTMENTS--PROBLEMS AND MANAGEMENT ACTIONS

Introduction

Appendix D-2 depicts allotment specific problems and management objectives for all I category allotments. Multiple use constraints have been applied. Economic analyses will be completed on all allotments that require investing public funds to implement needed improvements. Further refining management actions will be completed as consultation with permittees and management plan development occur.

TABLE D-2a

SPECIFIC PROBLEMS AND MANAGMENT ACTIONS FOR I ALLOTMENTS

Allotment Number	Resource Problems/Conflicts--Management Actions*	Allotment Number	Resource Problems/Conflicts--Management Actions*
8006	1	8068	1
8007	1	8075	1
8011	1	8079	1
8012	1	8083	1
8015	1	8087	1
8025	1	8089	1
8028	1	8096	1,3
8043	1	8097	1,3
8044	1	8103	1
8046	1	8106	1
8048	1	8108	1
8049	1	8110	1
8050	1	8111	1
8051	1	8131	1
8054	1	8140	1
8055	1	8141	1,3,4
8057	1	9039	1,2
8058	1	9041	1,2
8066	1	9048	1

Source: BLM Data 1985.

*Refer to Table D-2b for explanation of numbers.

TABLE D-2b
SPECIFIC PROBLEMS AND MANGEMENT ACTIONS FOR I ALLOTMENTS
(explanation of Table D-2a)

Resource problem/conflict	Management Actions
1. Lack of management facilities to improve condition and achieve forage potential.	Implement CMPs/update existing AMPs. Install rangeland improvements such as fences, cattleguards, water developments, and vegetation treatments.
2. Big game range values--competition for forage.	Provide land treatments to increase forage. Modify numbers and season of use of livestock. Develop grazing systems. Encourage cooperative rangeland improvements with the NMDG&F.
3. Riparian/aquatic habitat needing improvements.	Develop grazing systems. Restrict season of use. Limit forage utilization levels to promote riparian/aquatic resources. Fence habitat where necessary to protect and promote resources.
4. Recreation use conflicts.	Limit use levels and season of use to minimize conflicts. Provide fences, waters, and other facilities to distribute livestock away from recreation use areas.

Source: BLM Data 1985.

APPENDIX D-3
GENERAL PROBLEMS, OPPORTUNITIES AND ACTION FOR GRAZING MANAGEMENT

Current Situation	Possible Management Actions
Present levels of livestock use may exceed the carrying capacity of an allotment.	-Monitor actual livestock use and resulting levels of utilization to determine the proper carrying capacity.
Livestock use may be poorly distributed within an allotment or pasture, which can result in heavy utilization of some sites while others may receive little or no grazing use.	-Develop sources of water to distribute livestock more evenly. -Construct fences to alter traditional grazing patterns. -Specify placement of salt and mineral supplements.
Grazing season and selective grazing habits can reduce of different kinds of livestock the quality and quantity of vegetation produced by plant communities requirements.	-Change the season of use and/or the class or kind of livestock. -Implement rotational or deferred grazing systems that will provide for plant maintenance
Some sites may be producing a quality and quantity of forage well below their potential and have a low potential to respond to changes in grazing management alone.	-Increase productivity of these sites through mechanical treatment, prescribed fire, and/or seeding with native species or well-adapted introduced species.
Investments in rangeland improvements needed to implement changes in grazing management may not have favorable benefit/cost ratios.	Encourage contributions from range users and other parties benefiting from changed grazing management. Design grazing management systems that require a minimum investment in rangeland improvements but will meet the stated objectives.

Source: BLM Data 1985.

APPENDIX D-4

POSSIBLE GRAZING SYSTEMS

Deferred Rotation Grazing

Deferred rotation is discontinuing grazing on different parts of an allotment in succeeding years, which allows each pasture to rest successively during the growing season to permit seed production, establishment of seedlings, and restoration of plant vigor (Society for Range Management 1974). One or more pastures are grazed during the spring, while the remaining one or more pastures are rested until after seed ripening of key species, and then grazed. Deferred rotation grazing differs from rest-rotation grazing in that no yearlong rest is provided.

Rest-Rotation Grazing

Under a rest-rotation grazing system, grazing is deferred on various parts of an allotment during succeeding years, and the deferred parts are allowed complete rest for one or more years (Society for Range Management 1974). The allotment is divided into pastures, usually with comparable grazing capacities. Each pasture is systematically grazed and rested so that livestock production and other resources values are provided for, while the vegetation cover is simultaneously maintained or improved. This practice provides greater protection of the soil resource against wind and water erosion (USDA, FS 1965; Hormay 1970, Ratliff and Reppert 1974).

Any of several rest-rotation grazing systems may be used, depending upon the objectives for the allotment and the number of pastures.

Deferred Grazing

Deferred grazing is the discontinuance of grazing by livestock on an area for a specified period of time during the growing season. Under this system, grazing would begin after key plants have reached an advanced stage of development in their annual growth cycle. The growing season rest provided by this system promotes plant reproduction, establishment of new plants, or restoration of the vigor of old plants (American Society of Range Management 1964).

Alternate Grazing

Alternate grazing is grazing of an area by livestock every other season. Stoddard et al. (1975) describe the system:

> Rotation grazing, or alternate grazing, involves subdividing the range into units and grazing one range unit, then another, in regular succession. The rotation system of grazing is based upon the assumption that animals in large numbers make more uniform use of the forage, and that a rest from grazing is beneficial to the plant, even though it must support a greater number of animals in the shorter time during which it is grazed. Certainly, proper rotation grazing results in more uniform utilization. Large number of animals in small units are forced to spread over the entire area and to use the available forage more uniformly. Trampling is reduced because animals are held on small areas where feed is more abundant, and hence, less travel is necessary.

The rating is between 0 and 100, depending on how closely the existing plant community resembles climax. The following condition classes are used to express range condition.

Condition Class	Percentage of Potential or Climax Condition
Excellent	76-100
Good	51-75
Fair	26-50
Poor	0-25

Trend is the change in vegetation and soil characteristics as a direct result of environmental factors, primarily grazing and climate. The weight-estimate by species taken for condition is used to establish trend. In addition, percent composition and percent cover by species (point-pace transects) are used for trend determinations. Trend information is collected the first and fifth years of monitoring and subsequently compared. A 3 foot X 3 foot trend plot is established at the key area. A photograph of the trend plot and a general view photograph is taken the first and fifth years of monitoring.

Utilization. Utilization is defined as the degree of herbage removed. Utilization information is gathered in the spring on the previous years growth, prior to any significant new growth. Utilization is determined on one or more key species, and on the area as a whole, by an ocular-estimate method. A key species is potentially abundant, endures moderate grazing, and serves as an indicator of changes occurring in the vegetational complex. A 9.6 square foot protected plot is established for visual comparison in each key area. One 200-pace transect is used to determine utilization. At every twentieth pace along the transect, the utilization class is estimated. Utilization classes are used to show five relative degrees of use. The descriptive term represents a numerical range of percent utilization. Utilization classes are described below.

Slight (0-20%): Range shows no evidence of use by livestock, or range has the appearance of very light grazing. The key forage plants may be topped or slightly used. Current seedstalks and young plants of key species are little disturbed.

Light (21-40%): Range may be topped, skimmed, or grazed in patches, low value plants ungrazed; 60 to 80 percent of the number of current seedstalks of key plants remain intact. Most young plants are undamaged.

Moderate (41-60%): Range appears entirely covered as uniformly as natural features and facilities will allow. Fifteen to 25 percent of the number of current seedstalks of key species remain intact. No more than 10 percent of the number of low value forage plants utilizedm (moderate use does not imply proper use).

Heavy (61-80%): Range has appearance of complete search. Key species almost completely utilized with less than 10 percent of the current seedstalks remaining. Preferred shrubs hedged, shrub clumps may be slightly broken, shoots of rhizomatous grasses missing. More than 10 percent of the number of low value forage plants utilized.

Severe (81-100%): Range has mown appearance. Indications of repeated coverage. No evidence of reproduction or current seedstalks of key species. Key forage species completely utilized. Remaining stubble of preferred grasses grazed to soil surface. Shrub clumps hedged or broken.

APPENDIX D-5

METHODOLOGY - INVENTORY AND MONITORING

Beginning in the summer of 1981, range sites were transferred from Soil Conservation Service (SCS) aerial photographs to U.S. Geological Survey (USGS) topographic maps. A range site is a distinctive type of rangeland characterized by the amount, proportion, and kind of plant species produced. The production of a plant species is, in turn, determined by variations in soil types, climate, and topography.

Maps with allotment boundaries were made from the topographic maps. Major range sites and their key areas were determined for each pasture. A key area is the portion of a pasture which, because of location, grazing value, and/or use, is a representative sample of the entire pasture.

Initial condition was determined at the key areas on the study allotments. (Initial condition was not determined on those allotments with less than 30 percent public land and/or 1,540 acres or less public land). The two-phase ocular-reconnaissance method used to determine initial condition is described in the BLM Roswell District methodology book.

Starting in January 1982, study sites were selected in consultation with the rancher, at the key areas in each pasture, to monitor vegetative changes. These monitoring studies consist of five parts:

1. Precipitation
2. Actual Use
3. Forage production
4. Ecological condition and trend
5. Utilization

Precipitation. A permanent marker stake is located at each study site. A 6-inch capacity rain guage is fixed to this stake. Actual precipitation information is gathered from March through October. Winter precipitation is obtained from a local agency.

Actual Use. Actual use is the grazing use made of an area by livestock. This information is supplied by the livestock operator.

Forage Production. Production studies are conducted in the fall at the end of the growing season. A weight-estimate method is used to determine production. Three transects are established at approximately 120-degrees intervals. The three transects are 100 paces in length each (one pace equals two steps). At every 10 paces, the vegetation within a 4.8 square foot plot is clipped, weighed, and recorded. The three 100-pace transects may be run in one line in order to stay within the range site. Once estimates of weights are within 10 percent of actual weights, plots may be estimated.

Ecological Condition and Trend. Ecological range condition is the present state of vegetation on a range site as compared to the potential or climax plant community that the site is capable of producing. It may not describe the productivity of a site nor the site's potential to meet other resource management objectives. Potential plant communities on all range sites are described in technical guides written by the SCS 1980. The three 100-pace transects taken for forage production are used to establish a base for ecological condition. Condition is determined by measuring the percentage of total production that each species makes up. The numerical rating is then determined by counting the amount of all climax species not in excess of that shown in the range site guide.

A detailed description of methodology used in inventory and monitoring is available at the BLM CRA office.

APPENDIX D-6

CARRYING CAPACITY AND MANAGEMENT STATUS
(by Allotment and Alternative)

Introduction. Table D-6a displays AUMs by alternative by allotment; the following assumptions were made in developing these figures:

1. The figures shown under Alternative A correspond to current active preference and a 5-year average of actual use.

2. Under Alternatives B and C, the figures should reflect the suggested carrying capacity (5-year average of actual use) plus additional AUMs that would be gained through instituting effective grazing management practices and vegetation manipulations.

3. Under Alternative D, the figures should reflect the suggested carrying capacity plus additional AUMs that would be gained through instituting effective grazing management practices and vegetation manipulations.

4. Adequate funding and manpower would be available to implement each alternative.

5. All facilities and vegetation manipulations would be developed during the life of the plan, (20 years).

6. The following forage requirements were used to determine the estimated capacities by allotment by grazing animal. An AUM was considered to be 780 lbs. of air dry forage.

FORAGE REQUIREMENTS (Air Dry Forage)

Animal	Monthly Consumption lbs.
Cattle	780*
Yearlings (less than 2 yrs.)	585
Sheep	156
Mule Deer	100*
Goats	80

Source: Cook and Hyde 1980

*Roswell District Files

Table D-6a
CARRYING CAPACITY AND MANAGEMENT STATUS
(by Allotment by Alternative)

	Alternative A			Alternative B			Alternative C			Alternative D		
Allotment Number	Current Active Preference (AUMs)	AMP	Actual Use 1/ (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity 2/ (AUMs)
8001	1740		1523	1523		1523	1523		1523	1523		1180
8002	2430		1890	1890		1890	1890		1890	1890		1795
8003	326		326	326		326	326		326	326		168
8004	216		216	216		216	216		216	216		171
8005	24		24	24		24	24		24	24		24 4/
8006	1373		1331	1573	X	1331	1473	X	1331	1331	X	754
8007	744		744	919	X	744	864	X	744	744	X	442
8008	462		433	433		433	433		433	433		293
8009	288		253	253		253	253		253	253		256
8010	250		250	250		250	350		250	250		194
8011	370		354	400	X	354	400	X	354	354	X	164
8012	693		693	793		693	757		693	693	X	1410
8013	797		626	626	X	626	626	X	626	626		808
8014	1243		835	835		835	835		835	835		938
8015	1290		1181	1390	X	1181	1290	X	1181	1181	X	755
8016	1654		1459	1459		1459	1459		1459	1459		1556
8018	373		289	289		289	289		289	289		289 4/
8019	24		24	24		24	24		24	24		24 4/
8020	1458		1156	1156		1156	1156		1156	1156		784
8021	180		180	180		180	180		180	180		180 4/
8022	408		408	408		408	408		408	408		267
8023	204		204	204		204	204		204	204		204 4/
8024	36		36	36		36	36		36	36		36 4/
8025	1008		897	1108	X	897	1008	X	897	897	X	665
8026	2153		2153	2153	X	2153	2153		2153	2153		2085
8027	48		48	48		48	48		48	48		48 4/
8028	1186		1186	1200	X	1186	1200	X	1186	1186	X	621
8029	497		497	497		497	497		497	497		464
8030	355		355	355		355	355		355	355		233
8031	192		192	192		192	192		192	192		282
8033	84		84	84		84	84		84	84		92
8034	48		48	48		48	48		48	48		48 4/
8035	36		36	36		36	36		36	36		34
8036	36		36	36		36	36		36	36		27
8037	168		168	168		168	168		168	168		112
8038	135		135	135		135	135		135	135		153
8041	6533		2634	6533	X	2634	6533		2634	2634		4413

Table D-6a (continued)
CARRYING CAPACITY AND MANAGEMENT STATUS
(by Allotment by Alternative)

	Alternative A			Alternative B			Alternative C			Alternative D		
Allotment Number	Current Active Preference (AUMs)	AMP	Actual Use 1/ (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity 2/ (AUMs)
8042	204		204	204		204	204		204	204		204 4/
8043	502		364	404	X	364	404	X	364	364	X	492
8044	227		227	275	X	227	257	X	227	227		108
8045	132		132	132		132	132		132	132		132 4/
8046	821		821	921	X	821	821	X	821	821		563
8047	714		714	714		714	714		714	714		347
8048	4959		4238	5959	X	4238	5459	X	4238	4238	X	2621
8049	4747	X	4428	5347		4428	4747		4428	4428		1814
8050	11240	X	6586	12240		6586	11240		6586	6586		9463
8051	2172		1006	2572	X	1006	2372	X	1006	1006	X	1050
8052	3190		3190	3190	X	3190	3190		3190	3190		3391
8053	394		394	394		394	394		394	394		430
8054	390		237	400	X	237	390	X	237	237	X	237
8055	1331		1331	1531	X	1331	1481	X	1331	1331	X	724
8056	96		96	96		96	96		96	96		96 4/
8057	542		542	742	X	542	666	X	542	542	X	438
8058	1160		1160	1360	X	1160	1260	X	1160	1160	X	901
8059	60		60	60		60	60		60	60		60 4/
8060	1172		1172	1172		1172	1172		1172	1172		1115
8061	2403		2403	2403	X	2403	2403		2403	2403		1940
8062	1961	X	1884	2061		1884	1961		1884	1884		1474
8063	3996		3445	3696	X	3445	3596		3445	3445		3153
8064	4858	X	3636	5058		3636	4858		3636	3636		3710
8065	3596		2366	3596	X	2366	3596		2366	2366		3375
8066	1260		1008	1560	X	1008	1360	X	1008	1008	X	1168
8068	1152		1152	1452	X	1152	1292	X	1152	1152	X	1128
8069	137		123	123		123	123		123	123		123 4/
8070	12		12	12		12	12		12	12		12 4/
8071	126		68	68		68	68		68	68		68 4/
8073	282		282	282		282	282		282	282		282 4/
8074	12		12	12		12	12		12	12		12 4/
8075	588		588	788	X	588	688	X	588	588	X	467
8076	514		514	514		514	514		514	514		633
8077	1453		1453	1453		1453	1453		1453	1453		1822
8078	24		24	24		24	24		24	24		24 4/
8079	1772		1625	1972	X	1625	1872	X	1625	1625	X	1254
8080	2727		2529	2727	X	2529	2727		2529	2529		2738
8081	8142		3888	8142	X	3888	8142		3888	3888		7056
8082	1517		1517	1517		1517	1517		1517	1517		1493

Table D-6a (continued)
CARRYING CAPACITY AND MANAGEMENT STATUS
(by Allotment by Alternative)

	Alternative A			Alternative B			Alternative C			Alternative D		
Allotment Number	Current Active Preference (AUMs)	AMP	Actual Use 1/ (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity 2/ (AUMs)
8083	3519		3517	3719	X	3517	3619	X	3517	3517	X	2949
8084	3042		2688	2688		2688	2688		2688	2688		2990
8086	60		60	60		60	60		60	60		60 4/
8087	1676		1325	1839	X	1325	1756	X	1325	1325	X	1410
8088	317		317	317		317	317		317	317		213
8089	402		402	652	X	402	502	X	402	402	X	606
8090	72		72	72		72	72		72	72		72 4/
8091	300		300	300		300	300		300	300		300 4/
8092	195		180	180		180	180		180	180		135
8094	684		684	684		684	684		684	684		684 4/
8095	216		216	216		216	216		216	216		190
8096	337		337	537	X	337	437	X	337	337	X	494
8097	289		254	489	X	254	389	X	254	254	X	351
8098	84		84	84		84	84		84	84		84 4/
8099	228		228	228		228	228		228	228		132
8100	24		24	24		24	24		24	24		24 4/
8101	72		72	72		72	72		72	72		72 4/
8102	774		589	589		589	589		589	589		592
8103	1035		1035	1235	X	1035	1135	X	1035	1035	X	913
8104	1549		1504	1504	X	1504	1504		1504	1504		1466
8106	2906		2270	3246	X	2270	3106	X	2270	2270	X	3063
8107	1200		1200	1200		1200	1200		1200	1200		1717
8108	1824		1824	2524	X	1824	2024	X	1824	1824	X	1017
8110	356		351	351	X	351	351	X	351	351	X	441
8111	207		207	327	X	207	277	X	207	207	X	240
8112	192		192	192		192	192		192	192		387
8113	108		108	108		108	108		108	108		112
8114	2533		2533	2533	X	2533	2533		2533	2533		2626
8115	1095		723	723		723	723		723	723		957
8116	3024		2769	3024	X	2769	3024		2769	2769		2988
8117	276		276	276		276	276		276	276		276 4/
8118	282		215	215		215	215		215	215		176
8119	544		430	430		430	430		430	430		744
8121	3513		1152	3513	X	1152	3513		1152	1152		3153
8122	650		205	205	X	205	205		205	205		314
8123	48		38	38		38	38		38	38		38 4/
8126	134		107	107		107	107		107	107		287
8130	227		227	227		227	227		227	227		337
8131	792		792	992	X	792	842	X	792	792	X	653

Table D-6a (continued)
CARRYING CAPACITY AND MANAGEMENT STATUS
(by Allotment by Alternative)

	Alternative A			Alternative B			Alternative C			Alternative D		
Allotment Number	Current Active Preference (AUMs)	AMP	Actual Use 1/ (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity 2/ (AUMs)
8136	2313		1722	2313	X	1722	2313		1722	1722		1869
8138	206		165	165		165	165		165	165		357
8139	12		12	12		12	12		12	12		12 4/
8140	3996		3003	4296	X	3003	4196	X	3003	3003	X	1840
8141	506		428	706	X	428	606	X	428	428	X	1028
8142	506		428	428		428	428		428	428		675
9001	3306		2417	3506	X	2417	3306	X	2417	2417		2751
9002	2907	X	2907	3307		2907	3107		2907	2907		3060
9003	4272		3745	4272		3745	4272		3745	3745		3046
9005	4930		4930	4930		4930	4930		4930	4930		3443
9006	276		276	276		276	276		276	276		276 4/
9007	420		420	420		420	420		420	420		420 4/
9008	240		240	240		240	240		240	240		240 4/
9009	2211		2211	2211	X	2211	2211		2211	2211		945
9010	84		84	84		84	84		84	84		84 4/
9011	134		134	134		134	134		134	134		134
9012	96		96	96		96	96		96	96		96 4/
9013	640		640	640		640	640		640	640		640 4/
9014	132		132	132		132	132		132	132		132 4/
9015	684		684	684		684	684		684	684		684 4/
9016	552		552	552		552	552		552	552		552 4/
9017	8741		8194	8741		8194	8741		8194	8194		5956
9018	360		360	360		360	360		360	360		360 4/
9019	4409		4225	4409		4225	4409		4225	4225		4403
9020	660		660	660		660	660		660	660		402
9021	1092		1092	1092		1092	1092		1092	1092		890
9022	660		660	660		660	660		660	660		338
9023	60		60	60		60	60		60	60		60 4/
9024	1948	X	2389 3/	1948		1948	1948		1948	1948		884
9025	420		420	420		420	420		420	420		420 4/
9026	2408	X	1966	2508		1966	2408		1966	1966		1481
9027	1200		1200	1200		1200	1200		1200	1200		566
9028	9269	X	8229	9569		8229	9269		8229	8229		7397
9029	4257		3663	4357		3663	4257		3663	3663		2536
9030	4536	X	4137	4836		4137	4536		4137	4137		3531
9031	2621	X	2403	2871		2403	2621		2403	2403		1608
9032	5688		5693 3/	5788		5688	5688		5688	5688	X	2930
9033	1022		1022	1022		1022	1022		1022	1022		475
9034	204		204	204		204	204		204	204		204 4/

Table D-6a (continued)
CARRYING CAPACITY AND MANAGEMENT STATUS
(by Allotment by Alternative)

	Alternative A			Alternative B			Alternative C			Alternative D		
Allotment Number	Current Active Preference (AUMs)	AMP	Actual Use[1/] (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity (AUMs)	Estimated Potential Capacity (AUMs)	CMP	Estimated Initial Capacity[2/] (AUMs)
9035	36		36	36		36	36		36	36		36 [4/]
9036	672		672	672		672	672		672	672		672 [4/]
9037	1188		1069	1069		1069	1069		1069	1069		822
9038	144		144	144		144	144		144	144		87
9039	780		780	880		780	780	X	780	780		341
9041	816		816	900		816	816	X	816	816		363
9042	444		444	444		444	444		444	444		444 [4/]
9043	252		252	252		252	252		252	252		202
9044	504		504	504		504	504		504	504		239
9045	1386	X	1376	1486		1376	1426		1376	1376		967
9046	3672	X	1848	3872		1848	3672		1848	1848		2894
9047	84		84	84		84	84		84	84		84
9048	1776		1776	1976		1776	1876	X	1776	1776	X	1390 [4/]
9049	288		288	288		288	288		288	288		288 [4/]
9050	317		317	317		317	317		317	317		317 [4/]
9051	390		390	390		390	390		390	390		390 [4/]
9052	48		48	48		48	48		48	48		48 [4/]
9053	12		12	12		12	12		12	12		12 [4/]
9054	36		36	36		36	36		36	36		36 [4/]
9056	204		204	204		204	204		204	204		204 [4/]
TOTAL AUMs	216,369		191,515	232,416		191,510	225,458		191,510	191,014		177,707
Change from current active preference:	-0-		-12%	+7%		-12%	+4%		-12%	-12%		-18%
Change from 5-year actual use:	+12%		-0-	+17%		-0-	+15%		-0-	-1%		-7%

[1/] Corresponds to 5-year average of actual use; in the absence of actual use records, licensed use was substituted. Any actual use beyond preference is based on a temporary non-renewable basis.
[2/] Corresponds to estimates based on the 1984 Range Inventory.
[3/] Temporary non-renewable.
[4/] On unsurveyed allotments a 5-year average of actual use was substituted.

APPENDIX D-7

TYPICAL RANGELAND IMPROVEMENTS

Following is a discussion of typical design features and construction practices for rangeland improvements proposed in this plan. There are many special design features that are not specifically discussed in this appendix; they will be developed, if needed, for individual projects at the time an environmental assessment is (EA) written.

Structural Improvements

Fences

All fences would be built to BLM manual specifications. Normally, fences would be constructed to provide exterior allotment boundaries, divide allotments into pastures, protect streams, and control livestock. Most fences would be three-wire or four-wire with steel posts spaced 16-1/2 feet apart with intermediate wire stays. Existing fences that create wildlife movement problems would be modified. Proposed fence lines would usually not be bladed or scraped. Gates or cattleguards would be installed where fences cross existing roads.

Spring Development

Springs would be developed or redeveloped using a backhoe or hand labor to install a buried collection system, usually consisting of drain tile and a collection box. A short pipeline would be installed to deliver water to a trough for use by livestock and wildlife. Following development the spring area could be fenced to exclude livestock.

Pipelines

Wherever possible, water pipelines would be buried. The trench would be excavated by a backhoe, ditchwitch, or similar equipment. Rigid plastic pipe would be placed in the trench and the excavated material would be used to backfill. Most pipelines would have water tanks spaced approximately 1/2 mile apart.

Stock Ponds

Stock pond sites would be selected based on available watershed and hydrologic information. All applicable State laws and regulations would be followed.

Wells

Well sites would be selected based on geologic reports that predict the depth to reliable aquifers. All applicable State laws and regulations that apply to groundwater would be observed.

Nonstructural Improvements

Burning

Burning is proposed to reduce the amount of undesirable plant species on a site. Burning would normally be done during April-May or September-October, depending on the specific prescription written for each area, desired results, weather, and moisture conditions. Burn plans would be developed for each burn.

Plowing and Seeding, Chaining and Roller Chopping

Most of the sites to be treated are in poor or fair vegetation condition and have a low potential to improve under other management practices. Most of the existing vegetation would be eliminated during seedbed preparation, and the site would be seeded with species adapted to the site. The final selection of species to be seeded would depend on the planned use of the site and the management objectives for the allotment. Seed would be drilled wherever possible. The application of mulch and/or fertilizer would be prescribed based on site characteristics.

Interseeding

The treatment differs from plowing and seeding in that the existing vegetation is not eliminated during seedbed preparation. Desirable plant species would be interseeded with existing vegetation. A seed dribbler used with crawler tractor, small scalper/seeder, or range drill would be used to interseed strips. Broadcast seedings could possibly be used also. Species to be seeded would be selected to meet management objectives developed for the allotment.

APPENDIX D-8

GUIDANCE FOR LIVESTOCK MANAGEMENT

Management direction will emphasize increasing forage and livestock on a sustained yield basis. Emphasis is upon increasing forage, red meat and animal fiber production and improving forage composition and watershed conditions. Significant investments may be made in rangeland improvements which will be multiple use oriented (i.e., wildlife, watershed, etc.). Resource management activities compatible with livestock production will continue. Dispersed recreation opportunities will continue. Fire will be utilized to enhance forage production.

Management Direction For Other Resource Values

Resource/ Activity	General Guidance	Specific Management Direction				
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative D1
Cultural	Protect and manage important cultural resource.					
Recreation	Manage for dispersed recreation as the primary recreation activity. Permit yearlong, nonmotorized recreation activities throughout the area. Allow motorized ORV use. Establish site-specific visual quality objectives and design guidelines for landscape development projects during activity planning.					
Wildlife	Maintain or improve wildlife habitat and the diversity of native vegetation types. Allow compatible wildlife introductions or reintroductions or habitat improvements. Limit investments of wildlife program funds unless substantial benefits to wildlife resources can be realized. Riparian and pseudoriparian habitat will receive special consideration at the activity planning stage					

APPENDIX D-8 (continued)

Resource/ Activity	General Guidance	Specific Management Direction Alternative A	 Alternative B	 Alternative C	 Alternative D	 Alternative DI
	to ensure maintenance or improvement of these resources.					
Livestock Management	Manage suitable vegetation types for increased, sustained livestock production. One goal is to improve range condition and productivity on native rangeland. Use improved management systems such as rest-rotation and deferred-rotation, if appropriate. Invest in rangeland improvements necessary to implement management systems.	Continue current management on the 12 AMPs (200,000 acres.)	Develop 54 CMPs (691,000) The existing 12 AMPs would be maintained.	Develop 49 CMPs (413,000 acres) The existing 12 AMPs would be maintained.	Develop 45 CMPs (394,000 acres) The existing 12 AMPs would be maintained.	
Minerals	Allow mineral development in all areas not withdrawn from entry. Provide protective stipulations to limit impacts to livestock improvement or management practices.					
Lands	Allow for disposal of parcels of public land that do not significantly affect livestock management. Major utility corridors would be allowed with protective stipulations to prevent or limit impacts to rangeland management. Allow other land actions, when there					

APPENDIX D-8 (continued)

Resource/ Activity	General Guidance	Specific Management Direction				
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative DI
	is a clear and significant public need, when they will result in minimal adverse impacts, or when they will be beneficial to grazing management. Acquire or exchange lands when livestock management opportunities will be enhanced.					
Soils and Water	Maintain soil productivity, minimize man-caused soil erosion and strive to achieve adequate vegetation cover for watershed protection and plant vigor. Maintain water quality and quantity for multiple resource management. Secure sufficient water rights to provide for livestock management needs.					
Fire	Provide level of protection from wildfire that will result in least total cost and will generally enhance rangeland management values. Use prescribed fire when possible to enhance forage production.	Continue limited and expand modified fire suppression plans to enhance vegetation conditions for livestock grazing.	Continue limited and expand modified fire suppression plans to enhance vegetation conditions for livestock grazing.	Continue limited and expand modified fire suppression plans to enhance vetation conditions for livestock grazing.		
Access	Provide administrative access to public land to enhance management of the range resource. Provide maintenance of roads in the BLM transportation plan to minimum standards for user safety.					

APPENDIX D-9

ALLOTMENT CONDITION/MANAGEMENT STATUS

Allot. No.	Mgmt. 1/ Status	Total Public Acres	Present 2/ Class Livestock	Ecological Vegetation Condition (Acres)			
				Good	Fair	Poor	Unclassified
8001	M	6,112	C	6,112			
8002	M	9,863	C S	6,829	2,560		
8003	M	1,214	C		1,214		
8004	C	880	C	880			
8005	C	80	C				80
8006	I	5,400	C		5,400		
8007	I	3,200	C		3,200		
8008	M	2,215	C	400	1,815		
8009	C	1,280	C S	1,280			
8010	M	1,360	C		1,360		
8011	I	1,680	C		1,680		
8012	I	2,920	C		2,920		
8013	M	4,091	C	4,091			
8014	M	4,735	C	4,735			
8015	I	5,282	C		5,282		
8016	M	7,715	C	7,715			
8018	C	1,132	C				1,132
8019	C	71	C				71
8020	M	4,480	C S	4,480			
8021	C	1,300	C				1,300
8022	C	1,600	C		1,600		
8023	C	970	C				970
8024	C	160	C				160
8025	I	5,008	C		5,008		
8026	M	10,343	C	10,343			
8027	C	160	C				160
8028	I	3,783	C S	2,783	1,000		
8029	M	2,319	C	2,319			
8030	M	1,400	C		1,400		
8031	M	1,412	C	1,412			
8033	M	555	C		555		
8034	C	120	C				120
8035	C	240	C			240	
8036	C	160	C		160		
8037	M	560	C	560			
8038	M	920	C		920		
8041	M	25,675	C	25,675			
8042	C	800	C				800
8043	I	3,312	C	2,412		900	
8044	I	1,080	C			1,080	
8045	C	800	C				800

APPENDIX D-9 (continued)

ALLOTMENT CONDITION/MANAGEMENT STATUS

Allot. No.	Mgmt.[1/] Status	Total[2/] Public Acres	Present Class Livestock	Ecological Vegetation Condition (Acres)			
				Good	Fair	Poor	Unclassified
8046	I	4,080	C		4,080		
8047	M	2,220	S		2,220		
8048	I	19,688	C S		19,688		
8049	I	16,324	C S		16,324		
8050	I	43,143	C S	43,143			
8051	I	9,454	C		9,454		
8052	M	17,412	C	17,412			
8053	M	2,220	C	2,220			
8054	I	2,283	C			2,283	
8055	I	7,170	C		7,170		
8056	C	690	C				690
8057	I	3,727	C		3,727		
8058	I	6,529	C		6,529		
8059	C	240	C				240
8060	M	5,722	C	5,722			
8061	M	12,204	C	12,204			
8062	M	8,844	C	8,844			
8063	M	18,129	C	18,129			
8064	M	22,257	C	22,257			
8065	M	18,116	C	18,116			
8066	I	7,478	C		7,478		
8068	I	8,120	C		8,120		
8069	C	1,094	C				1,094
8070	C	160	C				160
8071	C	680	C				680
8073	C	1,130	C				1,130
8074	C	100	C				100
8075	I	3,440	C		3,430		
8076	M	3,474	C	3,474			
8077	M	8,770	C	8,770			
8078	C	160	C				160
8079	I	9,058	C S		9.058		
8080	M	14,171	C S	14,171			
8081	M	33,242	C	33,242			
8082	M	7,243	C	7,243			
8083	I	15,290	C	10,290	5,000		
8084	M	13,708	C	13,708			
8086	C	587	C				587
8087	I	11,582	C		11,582		
8088	C	1,280	C		1,280		

APPENDIX D-9 (continued)

ALLOTMENT CONDITION/MANAGEMENT STATUS

Allot. No.	Mgmt.[1/] Status	Total[2/] Public Acres	Present Class Livestock	Ecological Vegetation Condition (Acres) Good	Fair	Poor	Unclassified
8089	I	4,065	C		4,065		
8090	C	710	C				710
8091	M	2,317	C				2,317
8092	C	1,440	C		1,440		
8094	C	3,546	C				3,546
8095	C	1,680	C		1,680		
8096	I	3,900	C		3,900		
8097	I	3,510	C			3,510	
8098	C	480	C				480
8099	C	1,020	C		1,020		
8100	M	426	C				426
8101	C	360	C				360
8102	M	3,850	C	3,850			
8103	I	7,197	C		7,197		
8104	M	9,226	C	9,226			
8106	I	21,606	C		21,606		
8107	M	8,583	C	8,583			
8108	I	12,563	C		12,563		
8110	I	3,440	C		3,440		
8111	I	2,420	C			2,420	
8112	M	1,990	C	1,990			
8113	C	480	C	480			
8114	M	11,850	C S	11,850			
8115	M	4,115	C	4,115			
8116	M	12,847	C S	12,847			
8117	C	1,060	C				1,060
8118	M	1,758	C		1,758		
8119	M	3,720	C	3,720			
8121	M	25,573	C	25,573			
8122	I	5,074	C		5,074		
8123	C	420	C				420
8126	C	2,223	C		2,223		
8130	C	1,908	C	1,908			
8131	I	5,470	C		5,470		
8136	M	11,212	C	11,212			
8138	M	1,891	C	1,891			
8139	C	80	C				80
8140	I	14,734	C		14,734		
8141	I	7,421	C		7,421		
8142	M	3,376	C	3,376			
9001	M	12,959	C	12,959			
9002	M	13,158	C	13,158			
9003	M	13,099	C	13,099			

APPENDIX D-9 (continued)

ALLOTMENT CONDITION/MANAGEMENT STATUS

Allot. No.	Mgmt. Status	Total Public Acres	Present Class Livestock (Yearlong)	Ecological Vegetation Condition (Acres)			
				Good	Fair	Poor	Unclassified
9005	M	14,809	C S	14,809			
9006	C	1,000	C				1,000
9007	C	1,459	C				1,459
9008	C	845	C				845
9009	M	6,051	C		6,051		
9010	C	272	C				272
9011	C	625	C				625
9012	C	310	C				310
9013	C	2,208	C				2,208
9014	C	435	C				435
9015	C	2,764	C				2,764
9016	C	1,755	C				1,755
9017	M	25,610	C S	25,610			
9018	C	1,097	C				1,097
9019	M	13,210	C S	13,210[3/]			
9020	C	2,015	C	2,015			
9021	M	3,826	C	3,826			
9022	C	2,160	C		2,160		
9023	C	200	C				200
9024	M	5,743	C		5,743		
9025	C	1,187	C				1,187
9026	M	7,122	C	7,122			
9027	M	3,624	S		3,624		
9028	M	38,056	C	38,056			
9029	M	14,423	C S	14,423			
9030	M	17,825	C	17,825			
9031	M	8,652	C S	8,652			
9032	M	17,180	C S	17,180			
9033	M	3,040	C S		3,040		
9034	C	611	C				611
9035	C	120	C				120
9036	C	1,915	S				1,915
9037	M	3,505	C	3,505			
9038	C	374	C	374			
9039	I	2,180	C		2,180		
9041	I	2,323	C		2,323		
9042	C	1,364	C				1,364

APPENDIX D-9 (continued)

ALLOTMENT CONDITION/MANAGEMENT STATUS

Allot. No.	Mgmt. Status	Total Public Acres	Present Class Livestock (Yearlong)	Ecological Vegetation Condition (Acres)			
				Good	Fair	Poor	Unclassified
9043	C	1,291	C		1,291		
9044	C	1,528	C		1,528		
9045	M	4,158	S	4,158			
9046	M	12,823	C S	12,823			
9047	C	220	C				220
9048	I	5,977	C S	5,977			
9049	C	1,580	C				1,580
9050	C	940	C				940
9051	C	1,240	S				1,240
9052	C	160	C				160
9053	C	40	C				40
9054	C	102	C				102
9056	C	204	C				204

1/ M = Maintain, I = Improve, C = Custodial
2/ C = Cattle, S = Sheep
3/ Excellent Condition

NOTE: All allotments are year-long season of use allotments.

APPENDIX D-10

STANDARD HABITAT SITE DESCRIPTIONS FOR THE CARLSBAD RESOURCE AREA

Pinyon/Juniper Grass Mountain (NM 014)

Soil Associations are: AN, De, DEF, DRG, ECF, GD, LT, MXC, TOE

The dominant aspect is of Pinus edulis and Juniperus monosperma with sparse to medium dense grass cover of Bouteloua spp., Muhlenbergia spp. and Aristida spp. Cercocarpus montanus, Quercus spp., Chrysothamnus nauseosus, Rhus aromatic and Opuntia spp. are typically present with several annual and perennial forbs represented.

Mixed Shrub Hill (NM 006)

Soil associations are: EC, EcC, EcD, EE, ER, RRF, SR

Dominant species are Acacia constricta, Mimosa biuncifera, Condalia ericoides, Fallugia paradoxa, Rhus spp. with local representation of succulents including Yucca spp., Nolina spp., Agave, spp. and cacti. Clumps of grama grasses (Bouteloua spp.) are common. Additional typcial shrubs are Xanthocephalum sarothrae, Prosopis glandulosa, Larrea divaricata, Dalea formosa, Aloysia wrightii, Parthenium incanum, and Flourensia cernua.

Pseudoriparian NM 015)

Soil associations are: DP, PH, PK, PL, PM, PN

Defined as drainage or arroyo with perennial water flow supporting vegetation noncharacteristic of surrounding uplands. Grass and forb species are often sparse. Typical shrub and tree species are Chilopsis linearis, Celtis spp., Fallugia paradoxa, Sapindus spp., Tamarix ramosissima, Rhus microphylla, Acer grandidentatum, Quercus spp., Juglans microcarpa, Baccharis spp. Prosopis glandulosa, Fraxinus spp., and Brickellia spp.

Grass Flat (NM 011)

Soil associations are: LA, LN, RA, RE, RF, RH, RI, RM, RS, RU, GA

Grass flats are usually low swales and consist primarily of grass species. The dominant being Hilaria mutica. Others are Panicum obtusum, Bouteloua spp., Muhlenbergia spp., Scleropogon brevifolious, Sporobolus spp., and Eragrostis spp. Some areas are entirely of Sporobolus airoides. Shrub species are found in low numbers with Yucca elata being most common along with Xanthocephalum sarothrae, Flourensia cernua, Prosopis glandulosa and Koeberlinia spinosa.

Mixed Shrub Rolling Upland (NM 005)

Soil associations are: LN, LT, PS, TfD, Tg, UA, UG, UR

Mixed shrub rolling upland aspect with an understory of Bouteloua spp. and Muhlenbergia spp., Tridens spp., and Aristida spp. Characteristic shrubs are Xanthocephalum sarothrae, Acacia constricta, Mimosa biuncifera, Fallugia Paradoxa, Rhus spp. Flourensia cernua, Eriogonum wrightii and Cerocarpus monntanus.

STANDARD HABITAT SITE DESCRIPTIONS
FOR THE CARLSBAD RESOURCE AREA
(continued)

Mixed Shrub Gypsum Karst (NM 039)

Soil associations are: GC, RG

Mixed shrub rolling uplands dissected by steep gypsum arroyos and bluffs. Characteristic shrubs are *Rhus microphylla*, *Koeberlinia spinosa*, *Celtis* spp., *Prosopis glandulosa*, *Mimosa biuncifera*, *Yucca* spp., and *Coldenia* spp. Common grasses are *Hilaria* spp., *Bouteloua breviseta*, *Sporobolus* spp., *Bouteloua curtipendula*, *Bouteloua gracilis*, *Muhlenbergia* spp., and *Aristida* spp. Several forb species are common.

Mesquite Sand Dunes (NM 010)

Soil associations are: KL, SA, SG, SM, SO, PD

Prosopis glandulosa sand dunes. The dominant species is *Prosopis glandulosa*. Other commonly associated plants are *Atriplex canescens*, *Artemisia filifolia*, *Xanthocephalum sarothrae*, and a variety of annual and perennial forbs. *Sporobolus* spp. are the most common grasses. The dunes vary in height from 2 to 10 feet depending on soil depth.

Riparian (NM 016)

Soil associations are: BP, CR, Hk, Pv, Sh

Riparian refers to areas along perennial streams and sometimes around permanent water sources. Dominant plant species is *Tamarix* spp. with occasional species of *Populus* spp., *Salix* spp., *Platanus wrightii*, *Acer negundo*, *Juglans microcarpa*, *Rhus* spp., *Celtis* spp., and *Fraxinus* spp. Understory cover consist of *Berberis trifoliolata*, *Ceanothus* spp., *Krameria* spp., and *Prosopis gladulosa*. Several forbs are common but grasses are typically sparse.

Source: Soil Conservation Service 1976

APPENDIX D-II

GUIDANCE FOR WILDLIFE HABITAT MANAGEMENT

Management direction will emphasize achieving and maintaining the best possible habitat conditions for wildlife. Improving stream and watershed conditions and providing a high degree of vegetation diversity. Investments for wildlife habitat improvements could be high in certain areas. Dispersed recreation opportunities will continue. Livestock management will be of an integrity that will utilize available forage and maintain forage vigor while not degrading wildlife habitat. The number or season-of-use for livestock could be adjusted in some areas.

Management Direction For Other Resource Values

Resource/ Activity	General Guidance	Specific Management Direction				
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative DI
Wildlife	Intensively manage for optimal terrestrial & aquatic/riparian wildlife habitat. Maintain or improve historically occupied or potentially suitable threatened or endangered (T&E) species habitat.	Continue current management of the following big game animals: 9,100 mule deer 200 antelope	Manage big game for the following numbers of animals: 9,100 mule deer 200 antelope	Manage big game for the following numbers of animals, subject to monitoring results and availability of funds & personnel to implement needed improvement: 9,500 mule deer 350 antelope	Manage big game for the following numbers of animals: 9,500 mule deer 350 antelope	
	Maintain or improve habitat for sensitive plant & wildlife species & "migratory bird species of high Federal interest." Provide for necessary investments to enhance wildlife habitat. Cooperate with NMDG&F for funding of habitat improvement projects & also cooperate with NMDG&F on the reintroduction program.	Continue current management for T&E species as outlined recovery plans.		Invest wildlife funds for structural improvement and vegetation restoration projects to improve high priority of 4,500 acres of riparian habitat.	Invest wildlife funds for structural improvement and vegetation restoration projects to improve high priority of 4,500 acres of riparian habitat.	
Livestock Grazing	Manage livestock production to utilize available forage and maintain forage vigor, while not degrading wildlife habitat. Constrain range treatment projects to enhance wildlife & livestock					

APPENDIX D-II (continued)

Resource/ Activity	General Guidance	Specific Management Direction				
		Alternative A	Alternative B	Alternative C	Alternative D	Alternative DI
	forage, vegetation & habitat diversity. Reduce number of season-of-use for livestock where needed to provide sufficient forage for wildlife & to protect riparian & pseudoriparian habitat.					
Mineral Resources	Allow mineral development in all areas not withdrawn from entry. Provide protective stipulations to limit impacts to wildlife habitat or species. Limit &(or) provide protective stipulations for mineral development species.	Continue present leasing stipulations for oil & gas under existing oil & gas umbrella environment assessments (EAs).	Continue present leasing stipulations with changes to improve restoration of disturbed habitat and disallow saltwater disposal in unlined pits outside the saltwater disposal area.	Continue present leasing stipulations with changes to disallow saltwater disposal in pits west of the Pecos.	Continue present leasing stipulations with changes to disallow saltwater disposal in pits outside the saltwater disposal area.	
Land Tenure	Allow for disposal of public land not determined to be significant and manageable for wildlife habitat. Acquire or exchange land when management opportunities for wildlife are enhanced. Allow other land action, when there is a clear & significant public need, when they will result in minimal adverse impacts, or when they are beneficial to wildlife. Disallow rights-of-way within SMA's.					

APPENDIX D-II (continued)

Resource/ Activity	General Guidance	Specific Management Direction Alternative A	Alternative B	Alternative C	Alternative D	Alternative DI
Soil and Water	Maintain soil productivity, minimize man-caused soil erosion and strive to achieve adequate vegetation cover for watershed protection and plant vigor. Maintain or improve water quality and quantity for multiple use resource needs.					
Fire	Provide level of protection from wildfire that will result in least total cost and will generally enhance wildlife management values. Use prescribed fire when possible to enhance wildlife habitat.					
Access	Provide administrative access to public land for managing wildlife habitat. Close & reclaim any abandoned or poorly designed roads. Acquire public access where needed to allow wildlife-related recreation (including hunting & fishing in under-utilized areas).					

APPENDIX D-12

EXISTING WILDLIFE AUMs PER ALLOTMENT WEST OF THE PECOS RIVER

Allotment Number	Allottee	AUMs
8001	McCall, Hobby	36
8002	Ogalalla, Land	52
8003	White, I M	6
8004	Thigpen, Donald	4
8005	Joy, Johnny	-0-
8006	Robinson Cattle	30
8007	Eavenson, Jqck	20
8008	Kennedy, W G	10
8009	Sewell, Donnie	-0-
8010	Gissler, J W	10
8011	Kennedy, W G	-0-
8012	Hefner, Phillip	-0-
8013	Seeley, R W	12
8014	Ward, John	-0-
8015	Figg, Tom	30
8016	Hunter Ranch	24
8018	Menefee, Wesley	-0-
8019	Menefee, W & B	-0-
8020	Crockett, Inez	24
8021	Crockett, Ruth	-0-
8022	Steele, J J	-0-
8023	McCasland, Dallas	-0-
8024	Sears, Ross	-0-
8025	Kincaid, M B	24
8026	Haines, Blaine	48
8027	Wilson, Carroll	-0-
8028	Teel, Sammy	-0-
8029	Bach, Albert	15
8030	Bach, Emil	10
8031	Mellard, Robert	-0-
8033	Donaghe, Lester	-0-
8034	Pacheco, Leo	-0-
8035	Weddige, Bill	-0-
8036	Klein, Timmy	-0-
8037	Teel, Sammy	
8038	Williams, Alice	-0-
8041	Runyan, Frank	132
8042	Helm, Joe	5
8043	Hedgecock, Glen	-0-
8044	Hefner, Phillip	4
8045	Ross Ranch	12
8046	Houghtaling, Harold	16
8047	Runyan, David	-0-
8048	Deer Canyon	96
8049	Tulk, J C	96
8050	Kelly, Kap	228
8051	Box Canyon	44
8052	Foster, Lloyd	60
8053	Houghtaling, Harold	8
8054	McGonagill, Ernest	-0-
8055	Price, Gladys	24
8056	Champion, Clyde	-0-
8057	Watts, Marvin	-0-
8058	Michaelis, George	-0-
8059	Johnson, W I	-0-
8060	Howell, J E	23
8061	Lee, Opal	48
8062	Gissler, J W	36
8063	Boles, Wayne	7
8064	4T&KT Cattle	108
8065	Lyman, Patricia	64
	Gregory, Larry	118
8068	Watts, Marvin	23
8069	Truitt, W M	12
8071	Neill, John	-0-
8073	Leck, Jay	
8074	Nyman, Anne	-0-
8075	Gillock, William	12
8076	Rayroax, Jesse	12
8077	Kincaid, Lauri	24
8078	Albright, Marvin	-0-
8079	Kincaid, David	36
8080	Kincaid, Hugh	60
8081	Three Forks	166
8082	Davidson Ranch	36
8083	Smith, W G	72
8084	Fech Land & Cattle	60
8086	Skinner, Elmer	-0-
8087	Ogden Farms	45
8088	Moore, Wayne	7
8089	Hood, Walker	-0-
8090	Bounds, W D	-0-
8091	Ogden, James	-0-
8092	Davis, Harley	-0-
8094	Thompson, Gary	12
8095	Pardue Farms	4
8096	Cooksey, James	7
8097	IMCC	-0-
8098	Faulk, Harold	-0-
8099	Voscovo, Pete	-0-
8100	Brantley, Draper	-0-
8101	Cooksey, James	-0-
8102	McMahan, J H	12
8103	Wilhoit, Dale	24

APPENDIX D-12

EXISTING WILDLIFE AUMs PER ALLOTMENT WEST OF THE PECOS RIVER

Allotment Number	Allottee	AUMs
8104	Forehand Ranches	36
8106	Marquart, Elgin	60
8107	Try-Y Ranch	24
8108	Barber, Doyle	36
8110	Ballard, John	7
8111	Barber, Doyle	3
8112	Baillie, Wilma	-0-
8113	Judkins, G F	-0-
8114	Brantley, Draper	51
8115	Stell, Joe	22
8116	Doyal, James	62
8117	Forrest, Robert	5
8118	Miller, J W	6
8119	Miller, J W	11
8122	Mays, T A	12
8123	Miller, J W	-0-
8126	Miller, J W	1
8130	Farrell, Mrs. Hunter	-0-
8131	Sloan, L E	15
8136	Fine, Chester	75
8138	Miller, J W	5
8139	McCormick, Carl	
8140	McCall, Hobby	84
8141	Delaware Ranch	
8142	Delaware Ranch	
9001	Hackler, Loyd	60
9002	Treat, Loyd	60
9003	Diamond A Cattle	108
9005	Hendricks, Elsie	150
9006	Vandewart, James	-0-
9007	Vandewart, Ralph	-0-
9008	Bennett, R C	-0-
9009	Corn, James	44
9010	Clero, Bernard	-0-
9011	Bate, Williams	-0-
9012	Mayberry, Bob	-0-
9013	Cooper, John	-0-
9014	Clove, Oris	-0-
9015	Mulcock, Charles	1
9016	Powell, Hezzie	-0-
9017	Flying H	228
9018	Shelly, Jack	8
9019	Penasco River	89
9020	Taylor, J W	1
9021	Runyan, Tom & Thomas	2
9022	Runyan, J B	-0-
9023	Stone, Timmie	-0-
9024	Watts, Mrs.	36
9025	Watts, Thelbert	-0-
9026	Elkins, Sam	48
9027	Scharbauer Cattle	-0-
9028	Cauhape, F V	249
9029	Teel, George	88
9030	Casabonne, George	120
9031	Tulk, Johnny	54
9032	Casabonne, Johnny	10
9033	Means, Preston	12
9034	Harwell, Ernest	6
9035	Tidwell, Ira	-0-
9036	Means, Preston	-0-
9037	Johnson, Oliver	12
9038	Harwell, Ernest	6
9039	Lewis, Terry	18
9041	McCasland, Dallas	12
9042	Van Cleve, Farrell	-0-
9043	KXE	-0-
9044	Stevenson, Glen	-0-
9045	Terry, Ray Kent	24
9046	Craig, Jesse	75
9047	Johnson, Oliver	12
9048	Crockett, Doepp	36
9049	Means, Lewis	-0-
9050	Curtis, Eunice	6
9051	Joy, W R	8
9052	Mulcock, Charles	-0-
9053	Reeves, Loren	-0-
9054	Coupland, R F	-0-
9056	Stevenson, Willie	-0-
TOTAL		4,206

APPENDIX D-13

RARE PLANT SPECIES IN THE CARLSBAD RESOURCE AREA

PLANT SPECIES		FEDERAL STATUS			STATE PROPOSED STATUS
Scientific Name	Common Name	Threatened	Endangered	Candidate	Endandered
Astragalus gypsodes	Gypsum milk-vetch			X	X
Chaetopappa hersheyi	Hershey's cliff daisy			X	X
Coryphantha scheeri	Scheer's pincushion cactus				X
Coryphantha sneedii var. leei	Lee pincushion cactus	X			X
Coryphantha sneedii var. sneedii	Sneed pincushion cactus		X		X
Echinocereus kuenzleri	Kuenzler hedgehog cactus		X		X
Echinocereus lloydii	Lloyd hedgehog cactus		X		X
Epithelantha micromeris	Button cactus				X
Eriogonum gypsophilum	Gypsum wild buckwheat	X			X
Hedeoma apiculatum	McKittrick pennyroral	X			X
Polygala rimulicola	Guadalupe milkwort				X
Proboscidea sabulosa	Dune unicorn plant			X	X
Sibara grisea	Gray sibara			X	X
Sophora gypsophila var. guadalupensis	Guadalupe Mountain mescal bean			X	X

APPENDIX D-14

RARE ANIMAL SPECIES IN THE CARLSBAD RESOURCE AREA

ANIMAL SPECIES		FEDERAL STATUS			STATE ENDANGERED STATUS	
Scientific Name	Common Name	Threatened	Endangered	Candidate 1/	Rare I	Rare II
MAMMALS						
Mustela nigripes	Black-footed ferret	X	X			
Vulpes velox	Swift fox			X		
BIRDS						
Ammodramus bairdii	Baird's sparrow					X
Buteo regalis	Ferruginous Hawk			X		
Buteo swainsonii	Swainson's hawk			X		
Calcarius mccownii	McCown's longspur					X
Charadrius alexandrinus nivosus	Snowy plover			X		
Charadrius montanus	Mountain plover			X		
Coccyzus americanus occidentalis	Yellow-billed cuckoo			X		
Falco peregrinus anatum	American peregrine falcon		X		X	
Haliaeetus leucocephalus	Bald eagle		X			X
Ictinia mississippiensis	Mississippi kite					X
Numenius americanus	Long-billed curlew			X		
Passerina versicolor	Varied bunting					X
Phalacrocorax olivaceous	Olivaceous cormorant			X		X
Plegadis chihi	White-faced ibis			X		
Sterna albitrons anthalassos	(Interior) Least tern					X
Strix occidentalis lucida	Spotted owl			X		
Vireo hellii	Bell's vireo			X		X
Vireo vicinor	Gray vireo					X
REPTILES						
Crotalus lepidus lepidus	Rock rattlesnake					X
Elaphe subocularis	Trans-Pecos rat snake					X
Nerodia erythrogaster	(Blotched) Plain-bellied water snake					X
Pseudemys concinna	River cooter			X		X
Sceloporus graceosus arenicolous	Sagebrush lizard					X
Thamnophis proximus diabolicus	Western ribbon snake					X

APPENDIX D-14
RARE ANIMAL SPECIES IN THE CARLSBAD RESOURCE AREA
(continued)

ANIMAL SPECIES		FEDERAL STATUS			STATE ENDANGERED STATUS	
Scientific Name	Common Name	Threatened	Endangered	Candidate[1]	Rare I	Rare II
AMPHIBIANS						
Hylactophryne augusti	Barking frog					X
FISHES						
Astyanax mexicanus	Mexican tetra					X
Cycleptus elongatus	Blue sucker				X	
Etheostoma lepidum	Greenthroat darter					X
Gambusia nobilis	Pecos gambusia		X			X
Hybognathus nuchalis	Silvery minnow					X
Moxostoma congestum	Gray redhorse				X	
Notropis sinus pecosensis	Bluntnose shiner					X
Percina macrolepida	Bigscale logperch					X
MOLLUSKS						
Fontelicella sp.	Pecos spring snail					X
Popenaias popei	Pope's mussel				X	
Musculium transversum	Wide pea-clam					X
Pecosorbis kansasensis	New Mexico ramshorn snail			X		

[1] Candidate refers to those species which are currently in notice of review for threatened or endangered status.

APPENDIX

E

APPENDIX E

ALTERNATIVE PRESCRIPTIONS - SPECIAL MANAGEMENT AREAS

This appendix includes the following two items for each Special Management Area (SMA): table of management prescriptions by alternative, and a map (as appropriate) showing the SMA boundaries by alternative.

Chapter three (Affected Environment) describes the resource values of each SMA. In addition to the detailed maps for SMAs, Map D in the map pocket displays the relative location of all SMAs. Additional information for each SMA (i.e., background, objectives, etc.) are on file in the CRA

Restricted surface disturbance as it applies to SMAs will be defined on a case-by-case basis when the activity plans for the areas are developed. In general, an activity would be allowed as long as it does not interfere with the management objectives for the area.

Detailed management plans (activity plans) will be developed for each designated SMA. Proposed management actions apply only to lands and minerals administered by BLM. Management actions on non-BLM lands and minerals proposed for acquistion would be implemented only after those interests are acquired.

Maps for cultural and cave resource SMAs are not provided to protect sensitive resources.

For ease of reference, the following list gives page numbers for each SMA table:

SMA#	Special Management Area	Page No.	SMA #	Special Management Area	Page No.
1	Seven Rivers Hills	E-2	7	Yeso Hills[1/]	E-31
2	Cave Resources	E-4	8	Bluntnose Shiner Habitat	E-33
2(a)	McKittrick Hill Caves Complex	E-5	9	Little McKittrick Draw	E-35
2(b)	Lost Cave	E-6	10	Laguna Plata	E-37
2(c)	Fence Canyon Caves Complex	E-7	11	Maroon Cliffs	E-38
2(d)	Little Manhole/Big Manhole Caves	E-8	12	Potash Bull Wheel	E-39
2(e)	Yellowjacket/Lair Caves	E-9	13	Los Medano Raptor Area	E-40
2(f)	Chosa Draw Caves Complex[1/]	E-10	14	San Simon Swale Pronghorn Habitat	E-42
2(g)	Mudgetts/Little Mudgetts Caves	E-11	15	Phantom Banks Heronries Area	E-44
2(h)	Honest Injun Cave	E-12	16	Poco Site	E-46
3	South Texas Hill Canyon	E-13	17	Bear Grass Draw	E-47
4	Dark Canyon[1/]	E-15	18	Pecos River/Canyons Complex[1/]	E-48
5	Lonesome Ridge[1/]	E-17	19	Pope's Well	E-50
6	Springs Riparian Habitat	E-19	20	Guadalupe Escarpment Scenic Area	E-51
6(a)	Bogle Flat Spring	E-20	21	Alkali Lake ORV Use Area	E-53
6(b)	Preservation Spring	E-22	22	Hackberry Lake ORV Use Area	E-54
6(c)	Cottonwood Spring and Draw	E-24	23	Pecos River Corridor	E-57
6(d)	Owl Spring	E-25			
6(e)	Ben Slaughter Draw	E-27			
6(f)	Blue Spring[1/]	E-29			

[1/] Proposed Area of Critical Environmental Concern (ACEC) in Alternatives B, C, and D.

APPENDIX E-I
SEVEN RIVERS HILLS
SMA No. I

ALTERNATIVE A

Objective: To manage 540 acres to protect the Federally Threatened Gypsum Wild Buckwheat habitat from any further deterioration.

Prescriptions: Protect the plants and their habitat by monitoring disturbances or impacts and implementing certain Recovery Plan Objectives. Continue emergency ORV closure of area and disallow salable minerals, oil and gas development, and rights-of-way.

Rationale: The Endangered Species Act requires agencies to protect and manage Federally listed species on public lands. Continued management would protect the species and habitat from certain threats such as ORV use and other surface disturbing activities.

ALTERNATIVE B

Objective: Same as Alternative A.

Prescriptions: Same as Alternative A. In addition, disallow locatable mineral claims within the 540 acres.

Rationale: Same as Alternative A. In addition, locatable mineral mining would lead to unavoidable plant and habitat destruction of a Federally listed species in a Federally designated Critical Habitat Area (540 acres).

ALTERNATIVE C

Objective: Same as Alternative A, but also encourage improvement and expansion of Gypsum Wild Buckwheat habitat.

Prescriptions: Same as Alternative B. In addition, implement the Recovery Plan Objectives completely.

Rationale: Same as Alternative B. In addition, managing the population and habitat to increase the numbers while protecting the habitat may help remove the plant from an endangered status.

ALTERNATIVE D

Objective: Same as Alternative C.

Prescription: Same as Alternative C.

Rationale: Same as Alternative C.

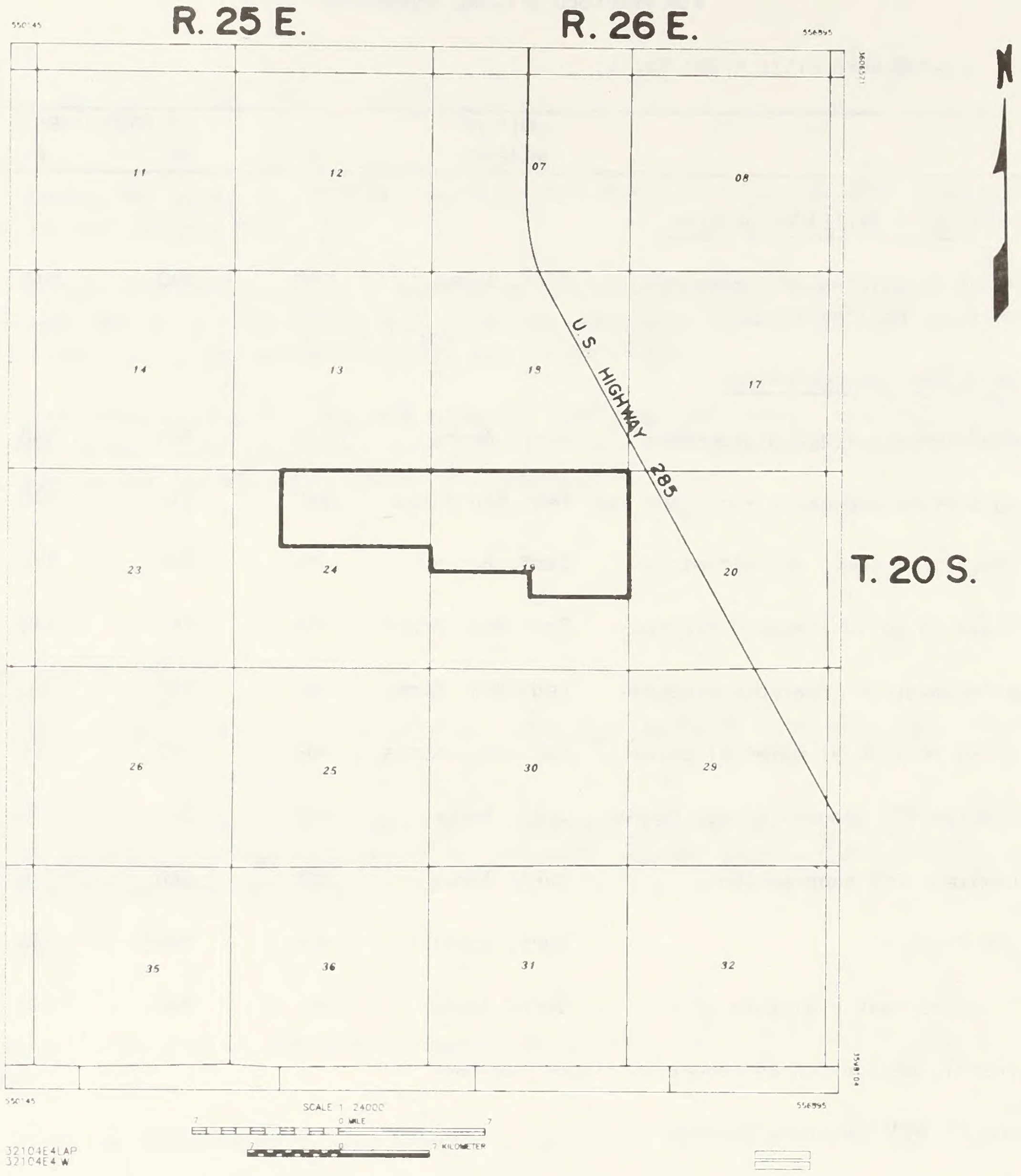
APPENDIX E-I
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Seven Rivers Hills - SMA No. I

	UNIT OF MEASURE	ALTERNATIVES			
		A	B	C	D
I Management Title/Designation					
Plant Threatened or Endangered Critical Habitat Area[1]	Surf. Acres	540	540	540	540
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	540	540	540	540
No Surface Occupancy - oil and gas	Fed. Min Acres	540	540	540	540
Close to seismic activities	Surf. Acres	-0-	540	540	540
Close to solid leasable minerals	Fed. Min. Acres	-0-	540	540	540
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	540	540	540
Close to mineral material sales	Fed. Min. Acres	-0-	540	540	540
Limited ORV use-designated routes	Surf. Acres	540	540	540	540
Limited fire suppression	Surf. Acres	540	540	540	540
VRM Class II	Surf. Acres	-0-	540[2]	540	540
Rights-of-way avoidance area	Surf. Acres	-0-	540	540	540

[1] Currently designated as Federal Critical Habitat.

[2] Based on VRM inventory results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SEVEN RIVER HILLS SMA No. 1

OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PUBLIC SURFACE AND MINERALS

SMA BOUNDARY

—— ALL ALTERNATIVES

APPENDIX E-2
CAVE RESOURCES
SMA No. 2(a-h)

Introduction: The Cave Resource Special Management Area (RSMA) consists of 18 caves (13 currently gated, 5 ungated) identified for intensive management due to their important resource values. For Alternatives B, C, and D, these 18 caves are grouped into eight cave management units, based on their specific location within the CRA. All eight management units are located within the larger cave resource primary occurrence zone of the CRA (see Chapter 3, Affected Environment - Caves). Proposed management prescriptions by alternative for each cave (Alternative A) or cave management unit are displayed in tables following this narrative. This narrative summarizes, by alternative, information about the caves and cave management units identified for intensive management.

ALTERNATIVE A

Objective: To continue intensive management of 13 gated and 5 ungated caves to protect their unique resource values while still providing for recreational, educational, and scientific use opportunities.

Prescriptions: Maintain the protective cave stipulation for oil and gas development (Roswell Number 5 special stipulation, for oil and gas operations - no drilling within 300 feet of cave passage and no pits within 600 feet of cave passage, etc). Continue issuance of special recreation permits and other authorizations for scientific research and environmental education. Continue management of Dry Cave for scientific paleontological research and maintain closure of Honest Injun Cave for protection of cultural values, and Jurnigan No. 2 for rare animal species habitat. Maintain cooperative management agreements (CMA) with appropriate interest groups. Continue withdrawal of locatable minerals affecting nine caves (McKittrick, Sand, Little Sand, Endless, Dry, Doc Brito, Wind, Jurnigan No. 1, and Jurnigan No. 2). Provide protective measures as required for ungated caves [Little and Big Manholes, Parks Ranch (at Chosa Draw), Mudgetts, Little Mudgetts, Yellowjackets, and Lair].

Rationale: Certain intensively managed caves receive heavy recreational/ educational use while others are most suitable for research or contain such fragile resources to require stringent protection. These caves contain delicate formations and other resource values of geologic, biologic, hydrologic, and paleontologic importance. Continued partial protection of those resources while still allowing compatible uses is consistent with existing BLM's National Cave Management Policy.

ALTERNATIVE B

Objective: To provide adequate protection for important cave resources while enhancing scientific research, environmental education, and intensive recreation use.

Prescriptions: Establish eight cave management units: McKittrick Hill Caves Complex, Lost Cave, Fence Canyon Caves Complex, Little Manhole/Big Manhole Caves, Yellowjacket/Lair Caves, Chosa Draw Caves Complex, Mudgetts/Little Mudgetts Caves, and Honest Injun Cave. Designate a 4,460-acre Cave Resource CRSRMA which would include McKittrick, Sand, Little Sand, and Endless caves of the McKittrick Hill Caves Complex, Fence Canyon Caves Complex (Doc Brito, Wind, Jurnigan No. 1 and Jurnigan No. 2 caves), Little Manhole/Big Manhole Caves, Yellowjacket/Lair Caves, Parks Ranch Cave of Chosa Draw Caves Complex, and Mudgetts/Little Mudgetts Caves. Designate 420 acres as Dry Cave RNA in the McKittrick Hill Caves Complex. Designate 10 acres as Honest Injun Cultural Resource Management

APPENDIX E-2

SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE
FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Cave Resources - SMA No. 2a-2h - SUMMARY SHEET

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation:					
Area of Critical Environmental Concern 2/	Surf. Acres	-0-	720	2,200	2,360
Paleontological Site (Dry Cave)1/	Surf. Acres	110	---	---	---
Research Natural Area	Surf. Acres	-0-	420	420	420
National Natural Landmark 3/	Surf. Acres	-0-	1,200	1,200	1,200
Special Recreation Management Area	Surf. Acres	-0-	4,460	5,990	6,010
Cultural Resource Management Area	Surf. Acres	10	10	10	10
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	4,890	7,900	8,080
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	4,890	6,860	8,720
Close to seismic activities	Surf. Acres	-0-	4,290	5,820	6,000
Special Stipulation	Surf. Acres	595	-0-	-0-	-0-
Close to solid leasable minerals	Fed. Min. Acres	-0-	2,050	4,175	4,555
Withdrawal of locatable minerals	Fed. Min. Acres	820	2,050	2,695	2,715
Close to mineral material sales	Fed. Min. Acres	-0-	4,890	8,340	8,720
Restrict livestock grazing	% max utilization	---	---	---	25%
Limited ORV use-designated routes	Surf. Acres	-0-	4,820	7,820	8,000
Closed to ORV use	Surf. Acres	-0-	60	60	60
Full fire suppression	Surf. Acres	545	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	50	4,890	7,990	8,080
Acquire access	Miles	-0-	0.5	0.5	0.5
Acquire nonFederal lands	Surf. Acres	-0-	-0-	480	1,240
Acquire nonFederal minerals	Min. Acres	-0-	-0-	40	40
VRM Class II	Surf. Acres	30	4,150	5,670	5,690
VRM Class III	Surf. Acres	555	730	740	740
Rights-of-way avoidance area	Surf. Acres	595	2,650	5,380	8,080

[1] Becomes RNA in Alternatives B, C, and D.

[2] 720 acres of this is included in the Special Managment Recreation Area in alts. B, C, & D.

[3] The 1200 acres in alts. B, C, & D include the RNA acreage and a portion Special Recreation Management Area.

Refer to McKittrick Appendix E2 page E7.

Area (CRMA). Designate the Chosa Draw Caves Complex (720 acres) as an ACEC. The Little Manhole/Big Manhole and Mudgetts/Little Mudgetts cave management units would also be included in the proposed Dark Canyon ACEC (see SMA No. 4). Designate 1,200 acres of the McKittrick Hill Caves Complex as McKittrick Hill Caves National Natural Landmark.

Rationale: Caves receiving intensive recreational use/demand require management to reduce resource damage, mitigate conflicts with other resource uses and provide scarce recreation activity opportunities. Maintaining predominantly semiprimitive motorized recreation opportunity settings within most of the cave management units is critical for enhancement of the quality of recreation opportunities anticipated by most users of these areas. This is particularly relevant for the McKittrick Hill Caves Complex where recreational caving, camping, hiking, and general sightseeing is of greatest demand.

Intensive management of Honest Injun Cave is required to provide continued protection of cultural resource values. Dry Cave is a rich source of Pleistocene and Holocene fossils dating to 35,000 years old, serving as an excellent source for scientific study of the environments of these geologic periods. Through the National Heritage Program, administered by the National Park Service (NPS), the caves of McKittrick Hill Caves Complex have been determined eligible for designation as a National Natural Landmark. Designation supports protective management and enhances recognition of the unique, highly diversified and sensitive natural values of these five caves. ACEC designation of the Chosa Draw Caves Complex mandates timely development of management plans appropriate to the resource values involved. Activity plans are to be completed within six months after approval of the ACEC plan element, and carries priority in terms of funding and management commitments. In light of resource conflicts and values of this area, ACEC designation seems applicable.

ALTERNATIVE C

Objective: To provide adequate protection for all important cave resources while still providing and enhancing recreational, educational, and scientific use opportunities.

Prescriptions: Same prescriptions as for Alternative B, except with increased acreage for most protective restrictions. The Cave Resources SRMA would be increased to 5,990 acres; the Chosa Draw Caves Complex ACEC to 2,200 acres. Also, some mineral and surface estate would be acquired.

Rationale: Same as for Alternative B, but expanding the protective stipulations and acreage would significantly enhance protection of these fragile cave resources.

ALTERNATIVE D

Objective: Provide maximum protection for cave resources.

Prescriptions: Same as for Alternative C, but with added acreage for protective stipulations; particulary NSO for oil and gas; withdrawal of locatable minerals; and closure to solid leasable minerals, mineral material sales, and seismic activities. The Cave Resources SRMA would increase to 6,010 acres, and the Chosa Draw Caves Complex ACEC would increase to 2,360 acres. Grazing in the Chosa Draw area would be restricted to 25 percent maximum utilization.

Rationale: Same as Alternative C, but added protective measures would maximize protection of cave resources. Restricted grazing at Chosa Draw Caves Complex would lessen contamination of the sensitive hydrologic ecosystem associated with these gypsum caves.

APPENDIX E-2
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: McKittrick Hill Caves Complex - SMA No. 2(a)

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Special Recreation Management Area [1/]	Surf. Acres	-0-	3,020	4,500	4,500
Dry Cave Research Natural Area	Surf. Acres	-0-	420	420	420
National Natural Landmark	Surf. Acres	-0-	1,200[2/]	1,200[2/]	1,200[2/]
Paleontological Site (Dry Cave)[3/]	Surf. Acres	110	-0-	-0-	-0-
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	3,440	4,920	4,920
Special Stipulation - oil and gas	Surf. Acres	230	-0-	-0-	-0-
No Surface Occupancy - oil and gas	Fed. Acres	-0-	3,440	4,920	4,920
Close to seismic activities[4/]	Surf. Acres	-0-	2,850	2,850	2,850
Close to solid leasable minerals	Fed. Min. Acres	-0-	600	755	755
Withdrawal of locatable minerals	Fed. Min. Acres	400	600	755	755
Close to mineral material sales	Fed. Min. Acres	-0-	3,440	4,920	4,920
Limited ORV use-designated routes	Surf. Acres	-0-	3,440	4,920	4,920
Full fire suppression	Surf. Acres	230	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	3,440	4,920	4,920
VRM Class II	Surf. Acres	-0-	3,440	4,920	4,920
VRM Class III	Surf. Acres	230[5/]	-0-	-0-	-0-
Rights-of-way avoidance area	Surf. Acres	230	1,200	3,440	4,920

[1/] Acreage includes management for McKittrick, Sand, and Endless caves of this complex of the proposed Cave Resources SRMA.

[2/] Includes portion of the proposed SRMA and the proposed Dry Cave RNA.

[3/] Paleontological site would be the RNA in Alternatives B, C, and D.

[4/] Within 3/4 mile of any known cave passages in Alternatives B, C, and D.

[5/] Based on VRM inventory results.

APPENDIX E-2
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Lost Cave SMA No. 2(b)

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
SRMA	Surf. Acres	-0-	10	20	20
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	10	20	20
Special Stipulation - oil and gas	Surf. Acres	10	-0-	-0-	-0-
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	10	20	20
Close to seismic activities	Surf. Acres	-0-	10	20	20
Close to solid leasable minerals	Fed. Min. Acres	-0-	10	20	20
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	10	20	20
Close to mineral material sales	Fed. Min. Acres	-0-	10	20	20
Full fire suppression	Surf. Acres	10	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	10	20	20
VRM Class III	Surf. Acres	10[1/]	10	20	20
Rights-of-way avoidance area	Surf. Acres	10	10	20	20

Name: Fence Canyon Caves Complex - SMA No. 2(c)

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
SRMA	Surf. Acres	-0-	300	340	360
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	300	340	360
Special Stipulation - oil and gas	Surf. Acres	50	-0-	-0-	-0-
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	300	340	360
Close to seismic activities	Surf. Acres	-0-	300	340	360
Close to solid leasable minerals	Fed. Min. Acres	-0-	300	340	360
Withdrawal of locatable minerals	Fed. Min. Acres	340	300	340	360
Close to mineral material sales	Fed. Min. Acres	-0-	300	340	360
Limited ORV use-designated routes	Surf. Acres	-0-	300	340	360
Full fire suppression	Surf. Acres	50	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	300	340	360
VRM Class II	Surf. Acres	-0-	300	340	360
VRM Class III	Surf. Acres	50[1/]	-0-	-0-	-0-
Rights-of-way avoidance area	Surf. Acres	50	300	340	360

[1/] Based on VRM inventory results.

APPENDIX E-2

SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Little Manhole/Big Manhole Caves[1] - SMA No. 2(d)

	UNIT OF MEASURE	ALTERNATIVES			
		A	B	C	D
I Management Title/Designation					
SRMA	Surf. Acres	-0-	100	100	100
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	100	100	100
Special Stipulation - oil and gas	Surf. Acres	20	-0-	-0-	-0-
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	100	100	100
Close to seismic activities	Surf. Acres	-0-	100	100	100
Close to solid leasable minerals	Fed. Min. Acres	-0-	100	100	100
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	100	100	100
Close to mineral material sales	Fed. Min. Acres	-0-	100	100	100
Limited ORV use-designated routes	Surf. Acres	-0-	100	100	100
Limited fire suppression	Surf. Acres	20	100	100	100
VRM Class II	Surf. Acres	-0-	100	100	100
VRM Class III	Surf. Acres	20[2]	-0-	-0-	-0-
Rights-of-way avoidance area	Surf. Acres	20	100	100	100

[1] Located in proposed Dark Canyon ACEC, Zone 2 (SMA No.4).

[2] Based on VRM inventory results.

Name: Yellowjacket/Lair Caves - SMA No. 2(e)

	UNIT OF MEASURE	ALTERNATIVES			
		A	B	C	D
I Management Title/Designation					
SRMA	Surf. Acres	-0-	260	260	260
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	260	260	260
Special Stipulation - oil and gas	Surf. Acres	50	-0-	-0-	-0-
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	260	260	260
Close to seismic activities	Surf. Acres	-0-	260	260	260
Close to solid leasable minerals	Fed. Min. Acres	-0-	260	260	260
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	260	260	260
Close to mineral material sales	Fed. Min. Acres	-0-	260	260	260
Limited ORV use-designated routes	Surf. Acres	-0-	260	260	260
Full fire suppression	Surf. Acres	50	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	260	260	260
VRM Class II	Surf. Acres	-0-	260	260	260
VRM Class III	Surf. Acres	50[1]	-0-	-0-	-0-
Rights-of-way avoidance area	Surf. Acres	50	260	260	260

[1] Based on VRM inventory results.

APPENDIX E-2
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Chosa Draw Caves Complex - SMA No. 2(f)

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Area of Critical Environmental Concern	Surf. Acres	-0-	720	2,200[2/]	2,360[3/]
Special Recreation Management Area[1/]	Surf. Acres	-0-	720	720[2/]	720[2/]
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	720	2,200[2/]	2,360[3/]
Special Stipulation - oil and gas	Surf. Acres	195	-0-	-0-	-0-
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	720	1,160[4/,6/]	3,000[4/,5/]
Close to seismic activities	Surf. Acres	-0-	720	2,200[2/]	2,360
Close to solid leasable minerals	Fed. Min. Acres	-0-	720	2,640[4/,6/]	3,000[4/,5/]
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	720	1,160[4/,6/]	1,160[4/,6/]
Close to mineral material sales	Fed. Min. Acres	-0-	720	2,640[4/,6/]	3,300[4/,5/]
Restrict livestock grazing	% of max. utilization	--	--	--	25%
Limited ORV use-designated routes	Surf. Acres	-0-	720	2,200	2,360
Full fire suppression	Surf. Acres	195	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	720	2,200	2,360
Acquire nonFederal lands	Surf. Acres	-0-	-0-	480	1.240
Acquire nonFederal minerals	Min. Acres	-0-	-0-	40	680
VRM Class III	Surf. Acres	195[7/]	720	720	720
Rights-of-way avoidance area	Surf. Acres	195	720	1,160[2/]	2,360[3/]

[1/] Acreage included in ACEC acreage.

[2/] Excludes 480 acres private land and 40 acres private minerals proposed for acquisition in Alternative C, and 600 acres private land and 40 acres private minerals in Alternative D.

[3/] Exludes 600 acres private land, 40 acres private minerals, and 640 acres State surface and minerals proposed for acquisiton.

[4/] Includes private surface/Federal minerals.

[5/] Excludes 40 acres private minerals and 640 acres State minerals proposed for acquisition.

[6/] Excludes 40 acres private minerals proposed for acquisition.

[7/] Based on VRM inventory results.

APPENDIX E-2
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Mudgetts/Little Mudgetts Caves[1] - SMA No. 2(g)

	UNIT OF MEASURE	ALTERNATIVES A	 B	 C	 D
I Management Title/Designation					
SRMA	Surf. Acres	-0-	50	50	50
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	50	50	50
Special Stipulation - oil and gas	Surf. Acres	30	-0-	-0-	-0-
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	50	50	50
Close to seismic activities	Surf. Acres	-0-	50	50	50
Close to solid leasable minerals	Fed. Min. Acres	-0-	50	50	50
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	50	50	50
Close to mineral material sales	Fed. Min. Acres	-0-	50	50	50
Close to ORV use	Surf. Acres	-0-	50	50	50
Full fire suppression	Surf. Acres	-0-	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	30	50	50	50
Acquire access	Miles	-0-	0.5	0.5	0.5
VRM Class II	Surf. Acres	30[2]	50	50	50
Rights-of-way avoidance area	Surf. Acres	30	50	50	50

[1] Located in proposed Dark Canyon ACEC, Zone I (SMA No. 4).

[2] Based on VRM inventory results.

Name: Honest Injun Cave - SMA No. 2(h)

	UNIT OF MEASURE	ALTERNATIVES A	 B	 C	 D
I Management Title/Designation					
CRMA	Surf. Acres	10	10	10	10
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	10	10	10	10
Special Stipulation - oil and gas	Surf. Acres	10	-0-	-0-	-0-
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	10	10	10
Close to solid leasable minerals	Fed. Min. Acres	-0-	10	10	10
Withdrawal of locatable minerals	Fed. Min. Acres	80	10	10	10
Close to mineral material sales	Fed. Min. Acres	-0-	10	10	10
Closed to ORV use	Surf. Acres	-0-	10	10	10
Full fire suppression	Surf. Acres	10	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	10	10	10
Acquire access	Miles	-0-	0.5	0.5	0.5
VRM Class IV	Surf. Acres	10[1]	10	10	10
Rights-of-way avoidance area	Surf. Acres	10	10	10	10

[1] Based on VRM inventory results.

APPENDIX E-3

SOUTH TEXAS HILL CANYON
SMA No. 3

ALTERNATIVE A

Objective: Manage under existing multiple-use policies.

Prescriptions: Continue livestock grazing management.

Rationale: No additional land-use conflicts presently exist except ORV traffic.

ALTERNATIVE B

Objective: Same as Alternative A.

Prescriptions: Same as Alternative A. In addition, allow future development of leases, salable and locatable minerals, and ORV use.

Rationale: Continuing existing management policies would maximize multiple use production under FLPMA guidelines.

ALTERNATIVE C

Objective: Manage and protect a representative area to develop research and acquire knowledge of the Chihuahuan Desert Mountain ecosystem.

Prescriptions: Designate 1,360 acres as RNA. Disallow all land disturbances including livestock, oil and gas occupancy, rights-of-way, mineral production, and ORV use within the canyon itself. Steep topography and existing fencelines would be used with some additional fencing.

Rationale: This follows the purpose and guidelines for designated RNAs. This area is an excellent representative sample of the Chihuahuan Desert ecosystem. Research would provide data from which land managment prescriptions for thousands of additional acres of similar habitat would be based.

ALTERNATIVE D

Objective: Same as Alternative C.

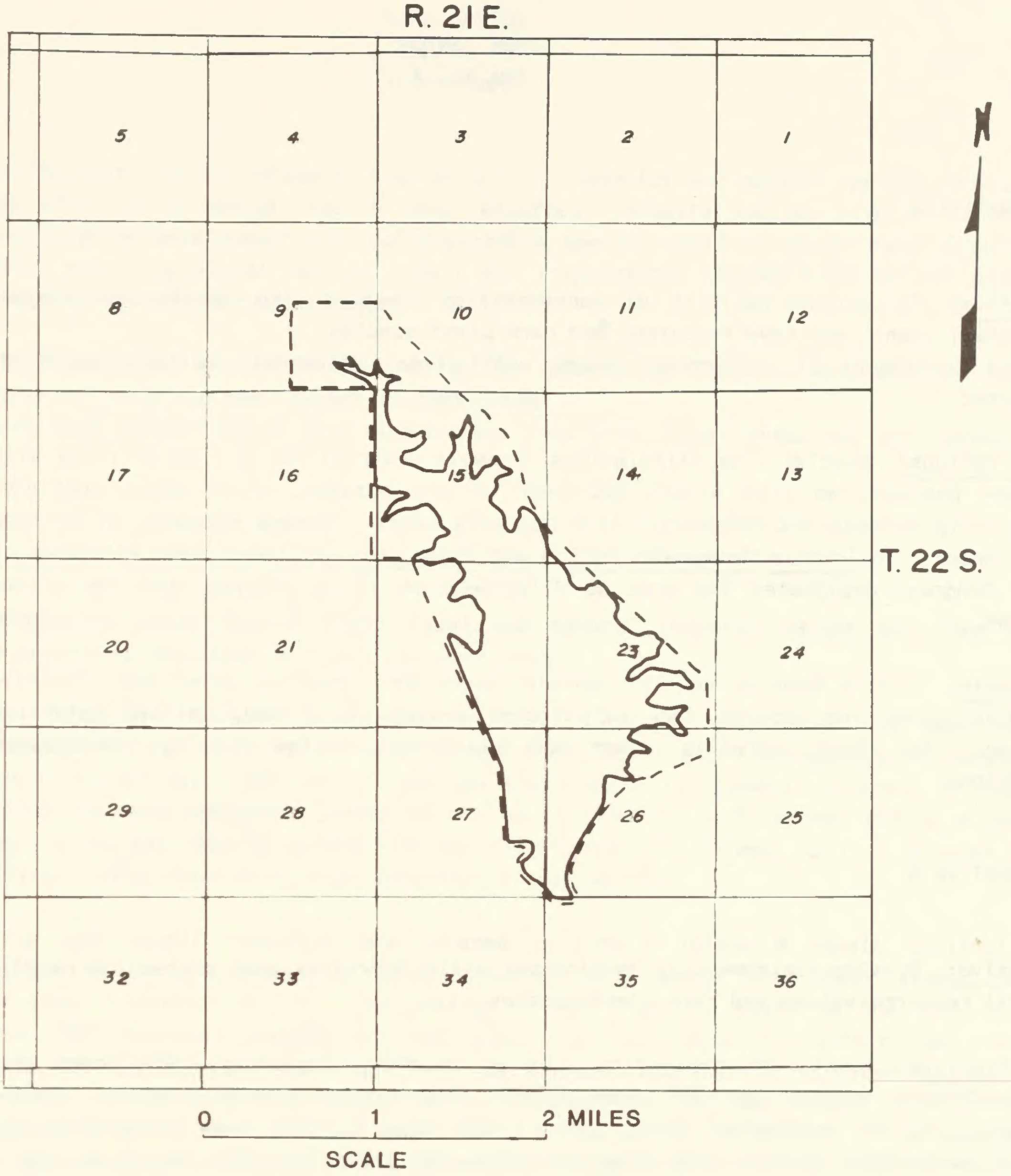
Prescriptions: Same as Alternative C. In addition, add acreage (600 acres) to incorporate a buffer zone outside the canyon walls.

Rationale: Changing the boundary would make it easier to implement management proposals as well as increasing a buffer zone around the canyon to lessen impacts from surrounding areas. A greater length of new fencing would be installed to protect the area from livestock.

APPENDIX E-3
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: South Texas Hill Canyon - SMA No. 3

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Research Natural Area	Surf. Acres	-0-	-0-	1,360	1,960
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	-0-	1,360	1,960
No Surface Occupancy - oil and gas	Fed. Min Acres	-0-	-0-	1,360	1,960
Close to seismic activities	Surf. Acres	-0-	-0-	1,360	1,960
Close to mineral material sales	Fed. Min. Acres	-0-	-0-	1,360	1,960
Exclude livestock grazing	Surf. Acres	-0-	-0-	1,360	1,960
Limited ORV use-designated routes	Surf. Acres	-0-	-0-	1,360	1,960
Full fire suppression	Surf. Acres	1,960	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	1,360	1,360	1,960
Rights-of-way avoidance area	Surf. Acres	--	--	1,360	1,960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SOUTH TEXAS HILL CANYON SMA No. 3

OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PUBLIC SURFACE AND MINERALS

SMA BOUNDARY

——— ALTERNATIVE C

- - - ALTERNATIVE D

APPENDIX E-4

DARK CANYON
SMA No. 4

ALTERNATIVE A

Objective: To continue multiple use management of the area with case-by-case project evaluation to protect scenic and cave resources and rare plant species.
Prevent impairment of wilderness values until final wilderness suitability determination is completed.

Prescriptions: Special cave stipulations (Roswell District No. 5 - no drilling within 300 feet of cave passage, no pits within 600 feet of any passage, etc.) would continue for Little Manhole/Big Manhole and Mudgetts/Little Mudgetts caves. Manage Mudgetts Wilderness Study Area in accordance to Interim Management Police and Guidelines for Land Under Wilderness Review (IMP) until Congress designates the area as wilderness or it is dropped from the wilderness review program.

Rationale: Little Manhole and Big Manhole caves are presently gated and intensively managed. All four caves are popular for recreational caving in a semiprimitive motorized recreation setting. Any area currently under BLM wilderness review requires management under IMP guidelines.

ALTERNATIVE B

Objective: Provide for commodity development while providing some protection of high visual and natural resource values and rare plant species.

Prescriptions: Designate the entire area as an ACEC, including 3,950 acres of public land surface/Federal minerals and 800 acres private land surface/Federal minerals. The ACEC would be divided into two management zones, Zone 1 and Zone 2. Two cave resource management units, Little Manhole/Big Manhole and Mudgetts/Little Mudgetts (sse SMAs No. 2(d) and 2(g) of this appendix] would be included in the ACEC. Management prescriptions would include the following:

> Both zones: Close to salable materials, designate limited ORV use (designated routes), limited fire suppression, acquire public access, and restrict surface disturbing activities. Manage in accordance to VRM Class III objectives.
>
> Zone 1: (3,120 public land surface/Federal mineral acres, and 800 acres private surface/Federal mineral acres) Require a lease development plan for any proposed leasable minerals development, subject ot stipulations, as appropriate, to minimize visual impacts. Permit no rights-of-way development on canyon walls or steep slopes fo the Fawn Valley and Serpentine Bends areas of Dark Canyon. Apply NSO stipulations on 50 acres at Mudgetts/Little Mudgetts cave management unit.

DARK CANYON
SMA No. 4
(continued)

Zone 2: (830 public surface/Federal mineral acres) Restrict and monitor surface disturbing activities which could damage fragile cave resources. Require special stipulation on oil and gas exploration/development (including possible special facility design requirements) to protect high sensitive visual values. Apply NSO stipulations on 100 acres at the proposed Little Manhole/Big Manhole cave management unit.

Rationale: The management prescriptions provide for maximizing leasable minerals development and allows other multiple use development in both zones
while providing some protection of high scenic and sensitive visual resources and intensively managed caves.

ALTERNATIVE C

Objective: Emphasize protection of high visual and natural resource values and rare plant species while providing for other multiple resource uses.

Prescriptions: Designate the entire area as an ACEC, with the same zones and same common management prescriptions as in Alternative B, except that Zone I would be managed in accordance with VRM Class II objectives. NSO for oil and gas would apply for Federal minerals in Zone I. Zone 2 would have the same management prescriptions as in Alternative B, except adding a special stipulation on oil and gas leasing prohibiting drilling operations between April 1 through Sept. 15 to partially mitigates impacts to high sensitive visual values.

Rationale: The most scenic resources are located in Zone I (Class A scenic quality) and includes the Fawn Valley and Serpentine Bends areas of Dark Canyon with their steep, rugged hillsides and sheer limestone cliffs. Designation of VRM Class II would be the same as was determined from VRM inventory results for the area. Portions also lie within the view of Carlsbad Caverns National Park. Zone 2 has VRM Class B scenic quality and includes terrain east of the Serpentine Bends ridgeline, typified by undulating limestone hills cut by steep drainages. The area abuts the Carlsbad National Park designated wilderness. The management prescriptions are designed to provide adequate protection of high visual and natural resource values while providing for commodity resource development. Surface disturbing activities could be seen from certain critical viewpoints within Carlsbad Caverns National Park.

ALTERNATIVE D

Objective: Maximize protection of high visual and natural resources and rare plant species while providing for other minimal-impact multiple-resource uses.

Prescriptions: Same as Alternative C, except acquire 1,280 acres of State land and minerals which would be managed the same as for Zone I.

Rationale: Land acquisition would provide for continuity in management of the more sensitive and scenic values within Zone I and ensure protection of a special semiprimitive motorized recreation opportunity setting associated with the Serpentine Bends area of this large canyon.

APPENDIX E-4
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Dark Canyon - SMA No. 4

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Area of Critical Environmental Concern	Surf. Acres[1]	-0-	3,950	3,950	3,950
Special Recreation Management Area[2]	Surf. Acres	-0-	150	150	150
Wilderness Study Area (Mudgetts)[3]	Surf. Acres	2,941	---	---	---
II Management Prescriptions					
Wilderness Interim Management Policy	Surf. Acres	2,941[3]	---	---	---
Restricted surface disturbance	Surf. Acres	-0-	3,950	3,950	3,950
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	150	4,020[4]	4,020[4]
Special Stipulation - oil and gas	Surf. Acres	50	-0-	-0-	-0-
Seasonal stipulation on oil and gas drilling activities 4/1-9/15	Surf. Acres	-0-	-0-	730[5]	730[5]
Close to seismic activities	Surf. Acres	-0-	150	150	150
Close to mineral material sales[6]	Fed. Min. Acres	-0-	4,750	4,750	4,750
Limited ORV use-designated routes	Surf. Acres	-0-	3,950	3,950	3,950
Full fire suppression	Surf. Acres	3,950	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	3,950	3,950	3,950
Acquire access	Miles	-0-	3	3	3
Acquire nonFederal lands	Surf. Acres	-0-	-0-	-0-	1,280
Acquire nonFederal minerals	Min. Acres	-0-	-0-	-0-	1,280
VRM Class II	Surf. Acres	3,120[9]	-0-	3,220[7]	3,220[7]
VRM Class III	Surf. Acres	830[9]	3,950	730[8]	730[8]
Rights-of-way avoidance area	Surf. Acres	2,941[3]	150	3,220[7]	3,220[7]

[1] Figure represents public land surface acreage only of Zone 1 (3,120 acres) and Zone 2 (830 acres).

[2] Acreage included in ACEC figure.

[3] As a WSA, this acreage is being managed in accordance with the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM, 1979, as revised). About 1,200 acres of the WSA is in Alternatives B, C, and D. Also, refer to Chapter 2, Continuing Management Guidance, Wilderness.

[4] In Zone 1, represents approximately 3,120 acres of public land surface/Federal minerals plus 800 acres of private land surface/Federal minerals; in zone 2, 100 acres for Little Manhole/Big Manhole caves.

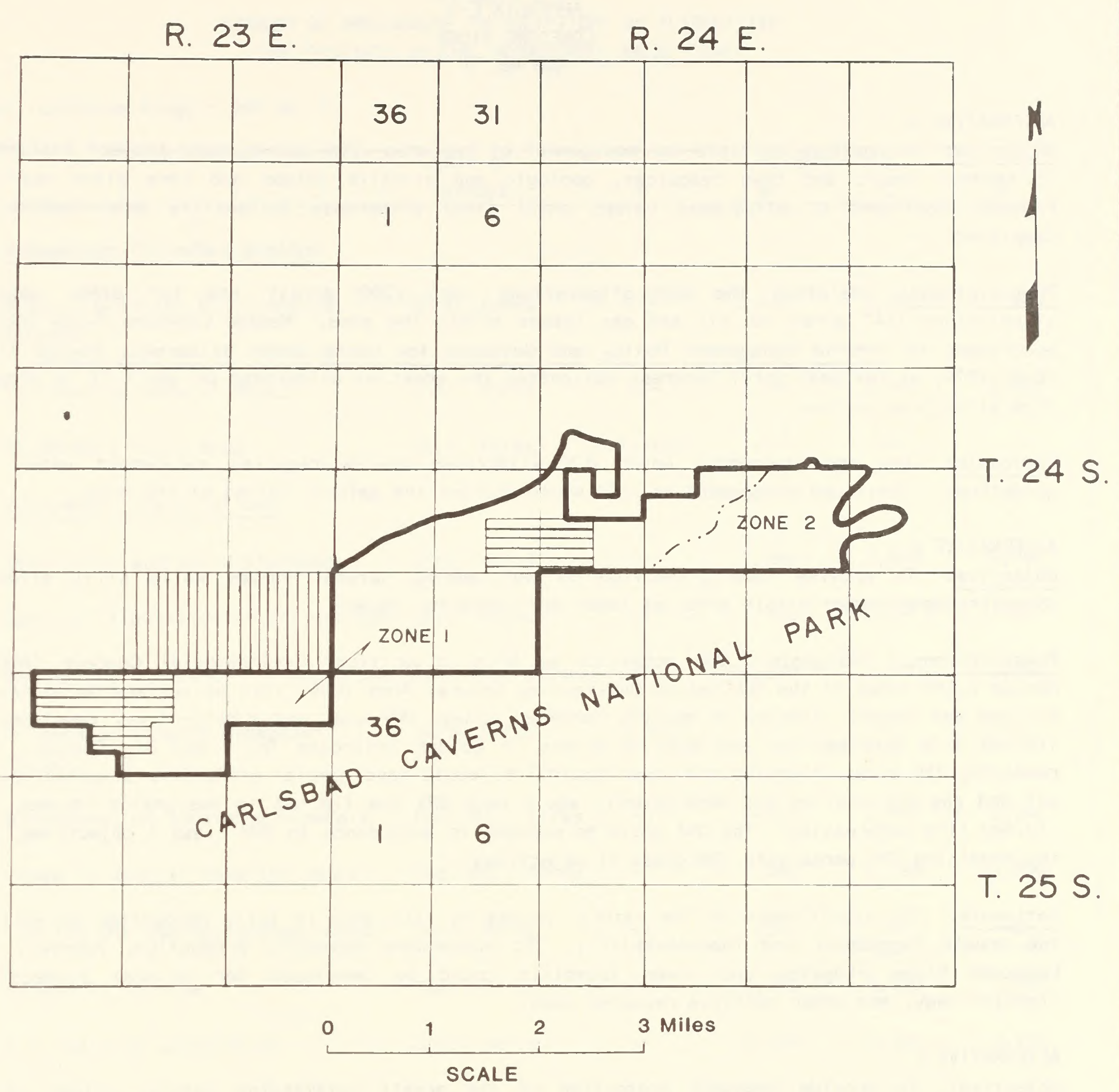
[5] In Zone 2, only, excluding Little Manhole/Big Manhole caves which is NSO.

[6] Figures represent public land surface/Federal minerals acreage plus nonpublic land surface/Federal minerals acreage of Zone 1 and Zone 2.

[7] Zone 1 and Little Manhole/Big Manhole Caves management unit of Cave Resources SRMA [SMA No. 2(d)] in Zone 2.

[8] Zone 2, except as noted in [7] above.

[9] Based on VRM inventory results.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3 Miles
SCALE

DARK CANYON SMA No. 4

OWNERSHIP STATUS (Shown inside SMA boundary, only)

☐ PUBLIC SURFACE AND MINERALS

▤ NON·PUBLIC SURFACE / PUBLIC MINERALS

PROPOSED ACQUISITION

▥ NON·PUBLIC SURFACE AND MINERALS — ALT. D.

SMA BOUNDARY

—— ALTERNATIVES B,C,D

_.._.. ZONE BOUNDARY

APPENDIX E-5
LONESOME RIDGE
SMA No. 5

ALTERNATIVE A

Objective: To continue multiple-use management of the area with case-by-case project evaluation to protect scenic and cave resources, geologic and wildlife values and rare plant species. Prevent impairment of wilderness values until final wilderness suitability determination is completed.

Prescriptions: Maintain the NSO stipulations (on 1,200 acres) and for other special stipulations (147 acres) on oil and gas leases within the area. Manage Lonesome Ridge WSA in accordance to Interim Management Policy and Guidance for Lands Under Wilderness Review (IMP) (BLM, 1979, as revised) until Congress designates the areas as wilderness or until it is dropped from wilderness review.

Rationale: Any area currently under BLM wilderness review requires management under IMP guidelines. Continued management as such would protect the natural values of the area.

ALTERNATIVE B

Objective: To provide some protection of outstanding natural values while still allowing commodity development within areas of least environmental impact.

Prescriptions: Designate 2,990 acres as an Area of Critical Environmental Concern (ACEC). Manage 2,240 acres of the ACEC as an Outstanding Natural Area (ONA) with no surface occupancy on oil and gas leases, closure to mineral material sales, ORV use, and rights-of-way development; limited fire suppression; and acquire access to Golden Staircase Trail and Big Canyon. The remaining 750 acres (ridgetop and lower foothills) would have special protective stipulations on oil and gas exploration and development, would have ORV use limited to designated routes, and limited fire suppression. The ONA would be managed in accordance to VRM class I objectives, and the remaining 750 acres with VRM class II objectives.

Rationale: The significance of the natural values in this area is fully recognized as well as the area's ruggedness and inaccessability. To accomodate commodity production, however, the Lonesome Ridge ridgetop and lower foothills could be developed for mineral production, rights-of-way, and other multiple resource uses.

ALTERNATIVE C

Objective: To provide adequate protection of the area's outstanding natural values in an unaltered condition.

Prescriptions: Same as for Alternative B, except the entire ACEC (2,990 acres) would be managed as an ONA with an added protective withdrawal from locatable minerals and closed to mineral material sales and off road vehcile use. The entire area would be managed in accordance with VRM class I objectives.

Rationale: This area is part of the Capitan Reef Complex, considered the world's foremost example of a Permian-age fossil reef. The rugged terrain includes caves, diverse wildlife, spectacular scenery, Threatened and Endangered species, and semiprimitive nonmotorized recreation opportunities. The area, though currently leased (oil and gas), does not fall within a known Geologic Structure (KGS) and has no mineral development within or around the proposed boundaries.

ALTERNATIVE D

Same as Alternative C.

APPENDIX E-5
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS (SMA)

Name: Lonesome Ridge - SMA No. 5

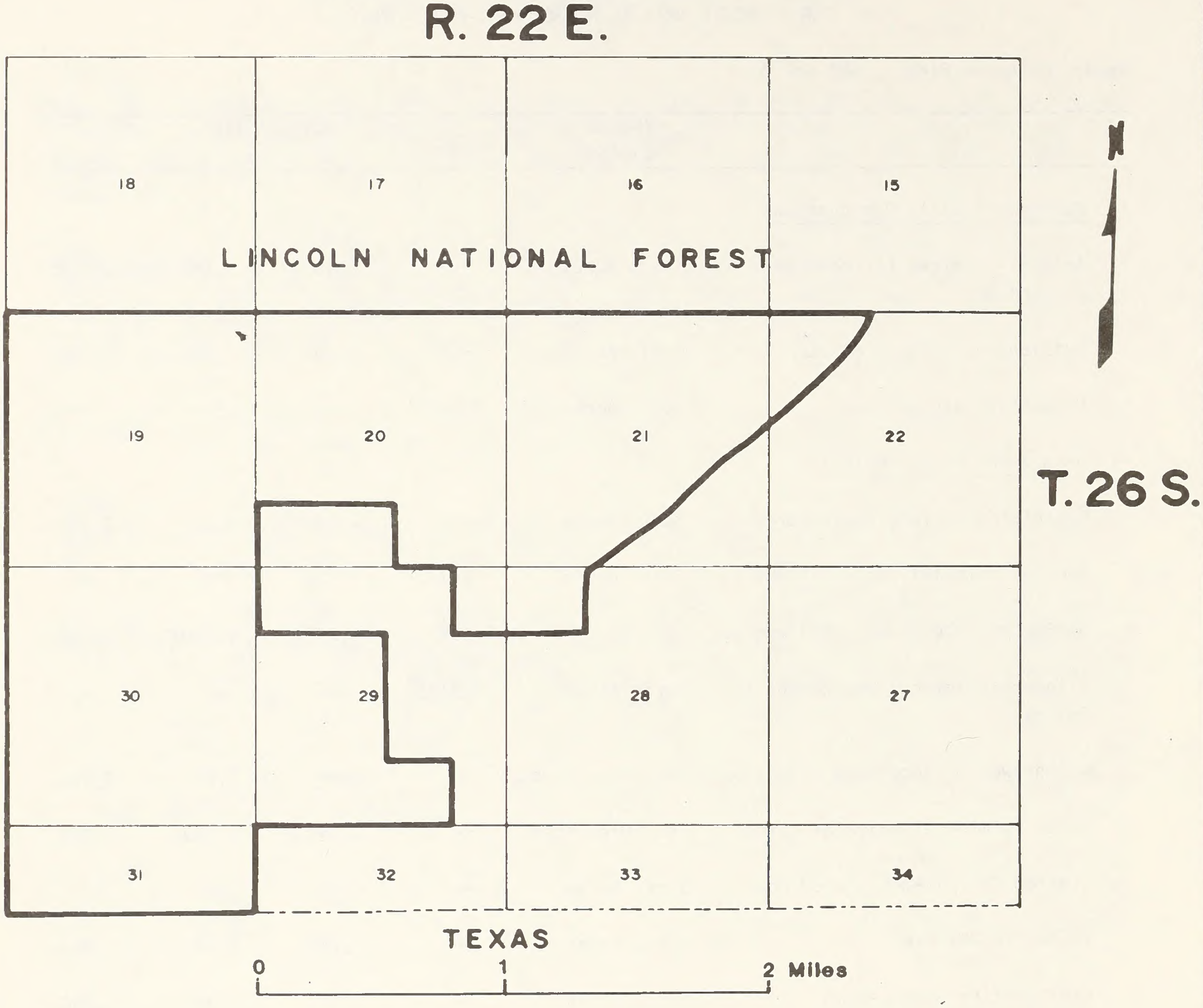
	UNIT OF MEASURE	A	B	C	D
		ALTERNATIVES			
I Management Title/Designation					
Area of Critical Environmental Concern	Surf. Acres	-0-	2,990	2,990	2,990
Outstanding Natural Area[1]	Surf. Acres	-0-	2,240	2,990	2,990
Wilderness Study Area	Surf. Acres	3,342[2]	---	---	---
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	--	2,990	2,990	2,990
Special Stipulations - oil and gas	Surf. Acres	147	750	-0-	-0-
No Surface Occupancy - oil and gas	Fed. Min. Acres	1,200	2,240	2,990	2,990
Wilderness Interim Management Policy	Surf. Acres	3,342[2]	--	--	--
Withdrawal of locatable minerals	Fed. Min. Acres	--	-0-	2,990	2,990
Close to mineral material sales	Fed. Min. Acres	--	2,240	2,990	2,990
Limited ORV use-designated routes	Surf. Acres	--	750	-0-	-0-
Closed to ORV use	Surf. Acres	--	2,240	2,990	2,990
Limited fire suppression	Surf. Acres	--	2,990	2,990	2,990
Acquire access	Miles	--	1.5	1.5	1.5
VRM Class I	Surf. Acres	-0-	2,240	2,990	2,990
VRM Class II	Surf. Acres	3,342[3]	750		
Rights-of-way avoidance area	Surf. Acres	3,342[3]	2,240	2,990	2,990

---

[1] Acreage included within proposed ACEC acreage, above.

[2] As a WSA, the area is currently being managed in accordance with the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM, 1979, as revised). Also, refer to Chapter 2, Continuing Management Guidance, Wilderness.

[3] Based on VRM inventory results.


R. 22 E.
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LONESOME RIDGE SMA No. 5

OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PUBLIC SURFACE AND MINERALS

SMA BOUNDARY

—— ALTERNATIVE B,C,D

APPENDIX E-6

SPRINGS RIPARIAN HABITAT (6 Spring Areas)

SMA No. 6(a-h)

ALTERNATIVE A

Objective: To manage resources under existing multiple-use management.

Prescriptions: Continue under existing multiple-use management.

Rationale: Continued current management would maximize multiple use of these springs.

ALTERNATIVE B

Objective: To manage and protect the integrity of all riparian or perennial waters as vital resources in the southwestern U.S. while minimizing constraints on commodity production. Also, to maintain habitat for Federally listed plant or animal species.

Prescription: Manage six springs (524 total acres) to varying degrees to protect Springs Riparian Habitat. One ACEC and one T&E Critical Habitat would be designated. Management prescriptions would include Restricted Surface Disturbance, NSO for oil and gas, closure to seismic activities, closure to leasing or prospecting permits, withdrawal of locatable minerals, closure to mineral material sales, livestock exclusion, ORV closure or limitation, limited fire suppression, and right-of-way avoidance.

Rationale: Protection of all waters, especially in the southwest U.S., is of national concern. Protection of the water and the riparian vegetation is especially crucial in maintaining wildlife habitat and associated species in the Chihuahuan Desert. The proposed management prescriptions would provide the minimum protection necessary to preserve the immediate spring areas and T&E habitat.

ALTERNATIVE C

Objective: To manage and protect the integrity of all riparian or perennial waters and Federally listed T&E plant and animal habitat while still allowing compatible uses.

Prescriptions: Same prescriptions as for Alternative B, but with expanded acreage for some management actions (1,004 total acres). Also, 480 acres of nonfederal lands and 200 acres of nonFederal minerals would be required.

Rationale: Same as for Alternative B, but the increased acreages would significantly increase portection of the Springs Riparian habitat and make implementation of management practices easier. Lands and mineral acquisition would provide significantly greater protection for Blue Spring and its Federally listed Pecos gambusia.

ALTERNATIVE D

Objective: To maximize protection of riparian and perennial waters and Federally lsited T&E plant and animal habitat while still allowing compatible uses.

Prescriptions: Same as for Alternative C but, with additional protective acreage for most management actions (2,006 total acres).

Rationale: Same as for Alternative C, but the additional acreage would maximize protection of all six spring riparian habitat.

APPENDIX E-6
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE
FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Springs Riparian Habitat - SMA No. 6 - SUMMARY SHEET

	UNIT OF MEASURE	A	B	C	D
I Management Title/Designation					
Springs Riparian Habitat	Surf. Acres	-0-	524	524	524
T&E Species Critical Habitat[1/]	Surf. Acres	-0-	165	205	375
ACEC [1/]	Surf. Acres	-0-	160	160	160
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	524	524	726
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	273	313	483
Close to seismic activities	Surf. Acres	-0-	306	346	536
Close to Solid leasable minerals	Fed. Min. Acres	-0-	321	801[2/]	1,001[2/]
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	165	804[2/]	1,006[2/]
Close to mineral material sales	Fed. Min. Acres	-0-	804[2/]	804[2/]	1,006[2/]
Exclude livestock grazing	Surf. Acres	-0-	199	439	471
Closed to ORV use	Surf. Acres	-0-	144	144	166
Full fire suppression	Surf. Acres	726	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	524	524	726
Acquire nonFederal lands	Surf. Acres	-0-	-0-	450	480
Acquire nonFederal minerals	Min. Acres	-0-	-0-	200	200
Rights-of-way avoidance area	Surf. Acres	-0-	524	804[2/]	1,0006[2/]

[1/] Acreage included in Springs Riparian Habitat.
[2/] Includes some nonFederal surface proposed for acquisition.

Name: Bogle Flat Spring - SMA No. 6(a)

	UNIT OF MEASURE	A	B	C	D
I Management Title/Designation					
Riparian Spring Habitat	Surf. Acres	-0-	3	3	5
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	3	3	5
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	-0-	3	5
Close to mineral material sales	Fed. Min. Acres	-0-	3	3	5
Exclude Livestock grazing	Surf. Acres	-0-	3	3	5
Closed to ORV use	Surf. Acres	-0-	-0-	3	5
Full fire suppression	Surf. Acres	5	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	3	3	5
Rights-of-way avoidance area	Surf. Acres	-0-	3	3	5

APPENDIX E-6
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Preservation Spring - SMA No. 6(b)

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Spring Riparian Habitat	Surf. Acres	-0-	33	33	53
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	33	33	53
Close to seismic activities	Surf. Acres	-0-	33	33	53
Close to solid leasable minerals	Fed. Min. Acres	-0-	33	33	53
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	-0-	33	53
Close to mineral material sales	Fed. Min. Acres	-0-	33	33	53
Exclude livestock grazing	Surf. Acres	-0-	33	33	53
Closed to ORV use	Surf. Acres	-0-	33	33	53
Full fire suppression	Surf. Acres	53	-0-	-0-	-0-
Limited fire suppression[1/]	Surf. Acres	-0-	10	10	20
Rights-of-way avoidance area	Surf. Acres	-0-	33	33	53

[1/] Although entire area will be under limited suppression, the acreage represents area recommended for prescribed burning.

APPENDIX E-6
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Cottonwood Spring and Draw - SMA No. 6(c)

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Spring Riparian Habitat	Surf. Acres	-0-	108	108	108
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	108	108	108
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	108	108	108
Close to seismic activities	Surf. Acres	-0-	108	108	108
Close to solid leasable minerals	Fed. Min. Acres	-0-	108	108	108
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	-0-	108	108
Close to mineral material sales	Fed. Min. Acres	-0-	108	108	108
Exclude livestock grazing	Surf. Acres	-0-	108	108	108
Closed to ORV use	Surf. Acres	-0-	108	108	108
Full fire suppression	Surf. Acres	108	-0-	-0-	-0-
Limited fire suppression[1/]	Surf. Acres	-0-	30	30	30
Rights-of-way avoidance area	Surf. Acres	-0-	108	108	108

[1/] Although entire area will be under limited suppression, the acreage represents area recommended for prescribed burning.

APPENDIX E-6
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Owl Spring - SMA No. 6(d)

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Spring Riparian Habitat	Surf. Acres	-0-	15	15	25
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	15	15	25
Close to solid leasable minerals	Fed. Min. Acres	-0-	15	15	25
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	-0-	15	25
Close to mineral material sales	Fed. Min. Acres	-0-	15	15	25
Exclude Livestock grazing	Surf. Acres	-0-	15	15	25
Limited ORV use - designated routes	Surf. Acres	-0-	15	15	25
Full fire suppression	Surf. Acres	25	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	15	15	25
Rights-of-way avoidance area	Surf. Acres	-0-	15	15	25

APPENDIX E-6
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Ben Slaughter Draw - SMA No. 6(e)

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Spring Riparian Habitat and Threatened Species Critical Habitat	Surf. Acres	-0-	205	205	375
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	205	205	375
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	165[1/]	205	375
Close to seismic activities	Surf. Acres	-0-	165[1/]	205	375
Close to solid leasable minerals	Fed. Min. Acres	-0-	165[1/]	205	375
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	165[1/]	205	375
Close to mineral material sales	Fed. Min. Acres	-0-	205	205	375
Exclude livestock grazing	Surf. Acres	-0-	40	40	80
Limited ORV use-designated routes	Surf. Acres	-0-	205	205	375
Full fire suppression	Surf. Acres	375	-0-	-0-	-0-
Limited fire suppression[1/]	Surf. Acres	-0-	205	205	375
Rights-of-way avoidance area	Surf. Acres	-0-	205	205	375

[1/] Mineral acreage necessary to protect spring and Federally threatened gypsum wild buckwheat.

APPENDIX E-6
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Blue Spring - SMA No. 6(f)

	UNIT OF MEASURE	ALTERNATIVES A	B	C[1]	D[1]
I **Management Title/Designation**					
Spring Riparian Habitat	Surf. Acres	-0-	160	160	160
Area of Critical Environmental Concern	Surf. Acres	-0-	160	160	160
II **Management Prescriptions**					
Restricted surface disturbance	Surf. Acres	-0-	160	160	160
Close to solid leasable minerals	Fed. Min. Acres	-0-	-0-	440	440
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	-0-	440	440
Close to mineral material sales	Fed. Min. Acres	-0-	440	440	440
Exclude livestock grazing	Surf. Acres	-0-	-0-	160	160
Limited ORV use-designated routes	Surf. Acres	-0-	160	160	160
Full fire suppression	Surf. Acres	160	-0-	-0-	-0-
Limited fire suppression[1]	Surf. Acres	-0-	160	160	160
Acquire nonFederal lands	Surf. Acres	-0-	-0-	480	480
Acquired nonFederal minerals	Min. Acres	-0-	-0-	200	200
Rights-of-way avoidance area	Surf. Acres	-0-	160	160	160

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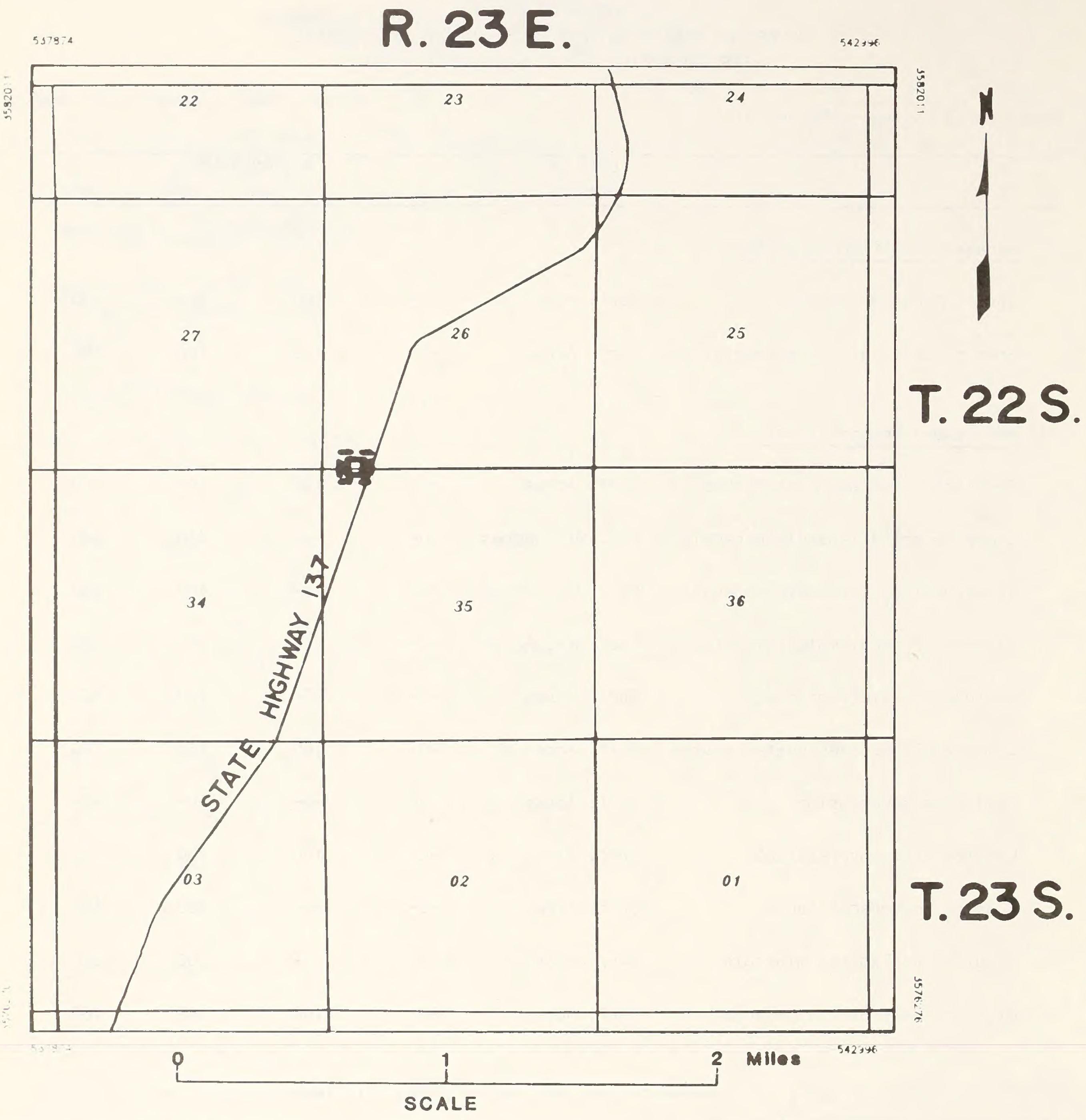
[1] Prescriptions only apply if nonFederal lands are not acquired. If they are acquired, the prescription acreage will total 640 acres.

[2] Excludes oil and gas.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SCALE

BOGLE FLAT SPRING SMA No. 6 (a)

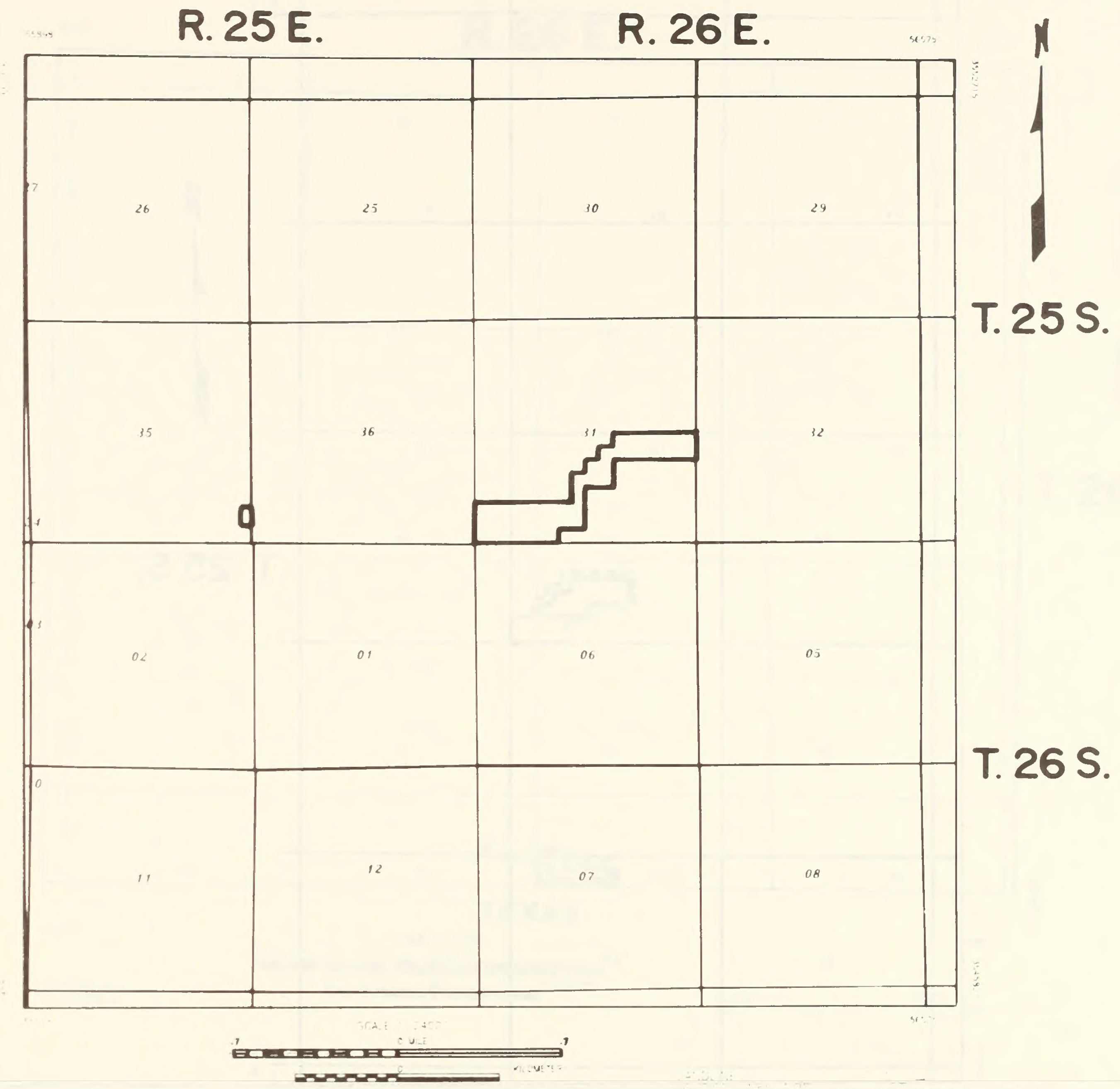
OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PUBLIC SURFACE AND MINERALS

SMA BOUNDARY

——— ALTERNATIVE B,C

- - - - ALTERNATIVE D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PRESERVATION SPRING SMA No. 6(b)

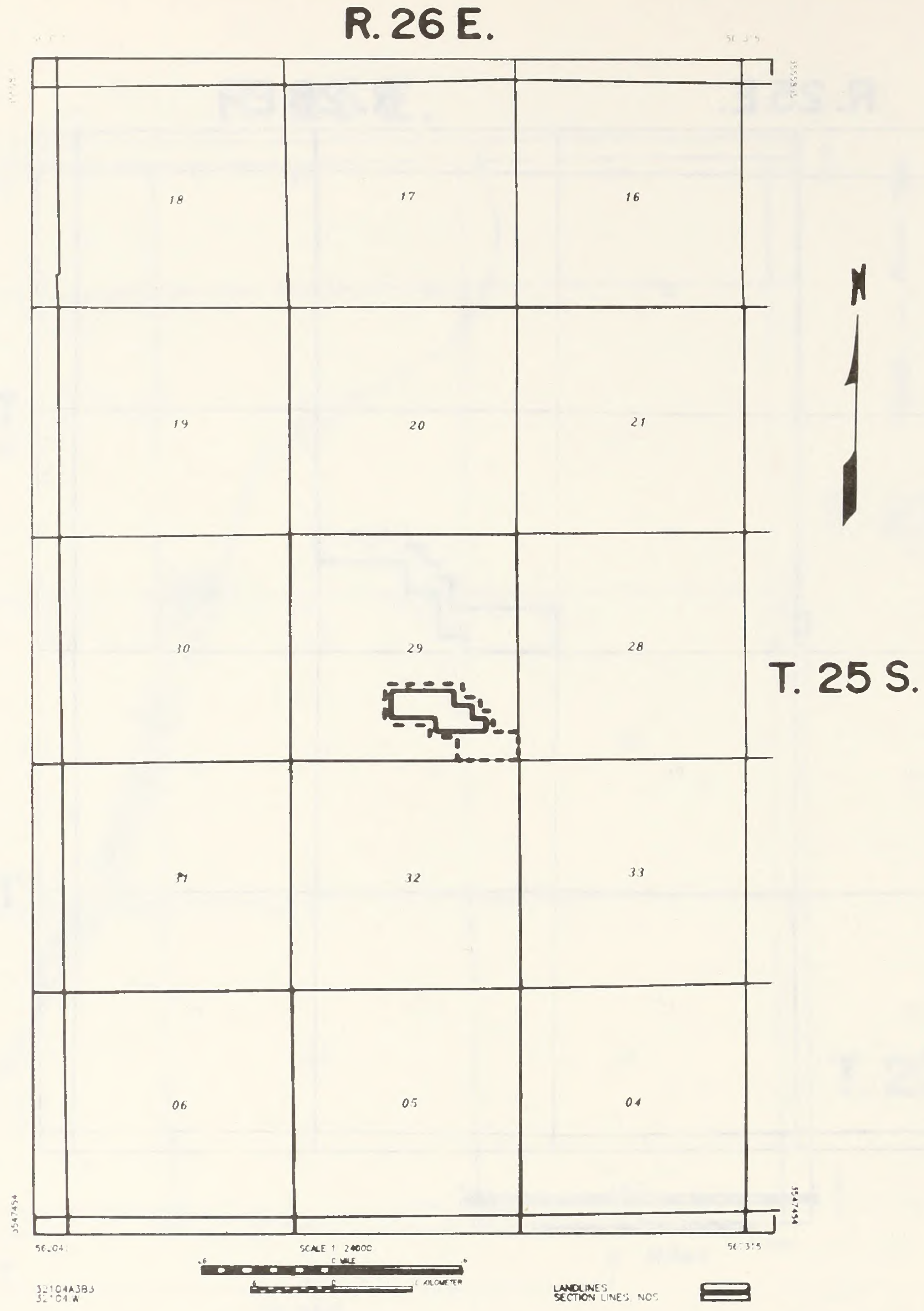
OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PUBLIC SURFACE AND MINERALS

SMA BOUNDARY

——— ALTERNATIVE B, C

- - - - - ALTERNATIVE D



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SECTION LINES, NOS

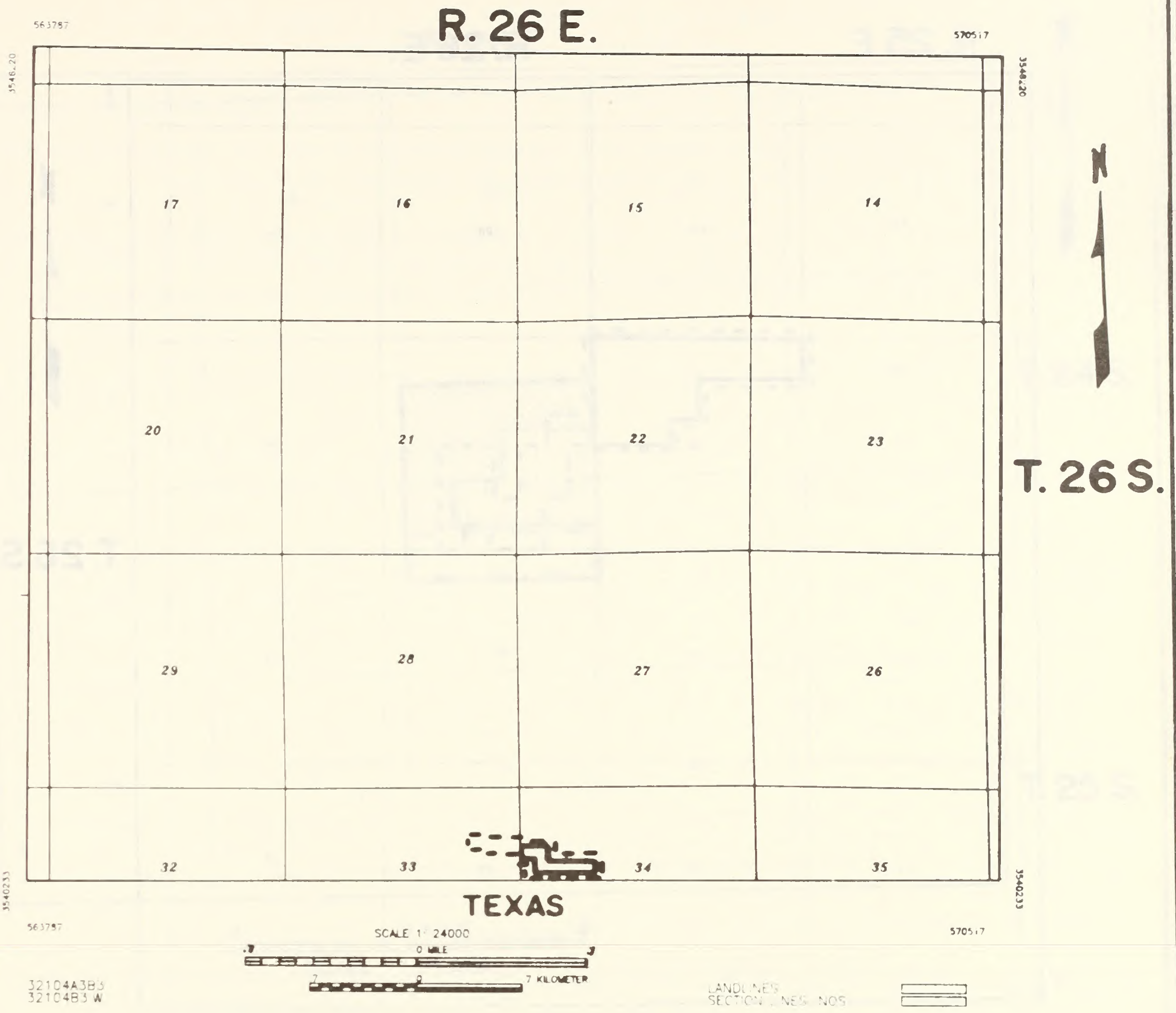
COTTONWOOD SPRING AND DRAW SMA No. 6(c)

OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PUBLIC SURFACE AND MINERALS

SMA BOUNDARY

—— ALTERNATIVE B, C, D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OWL SPRING SMA No. 6 (d)

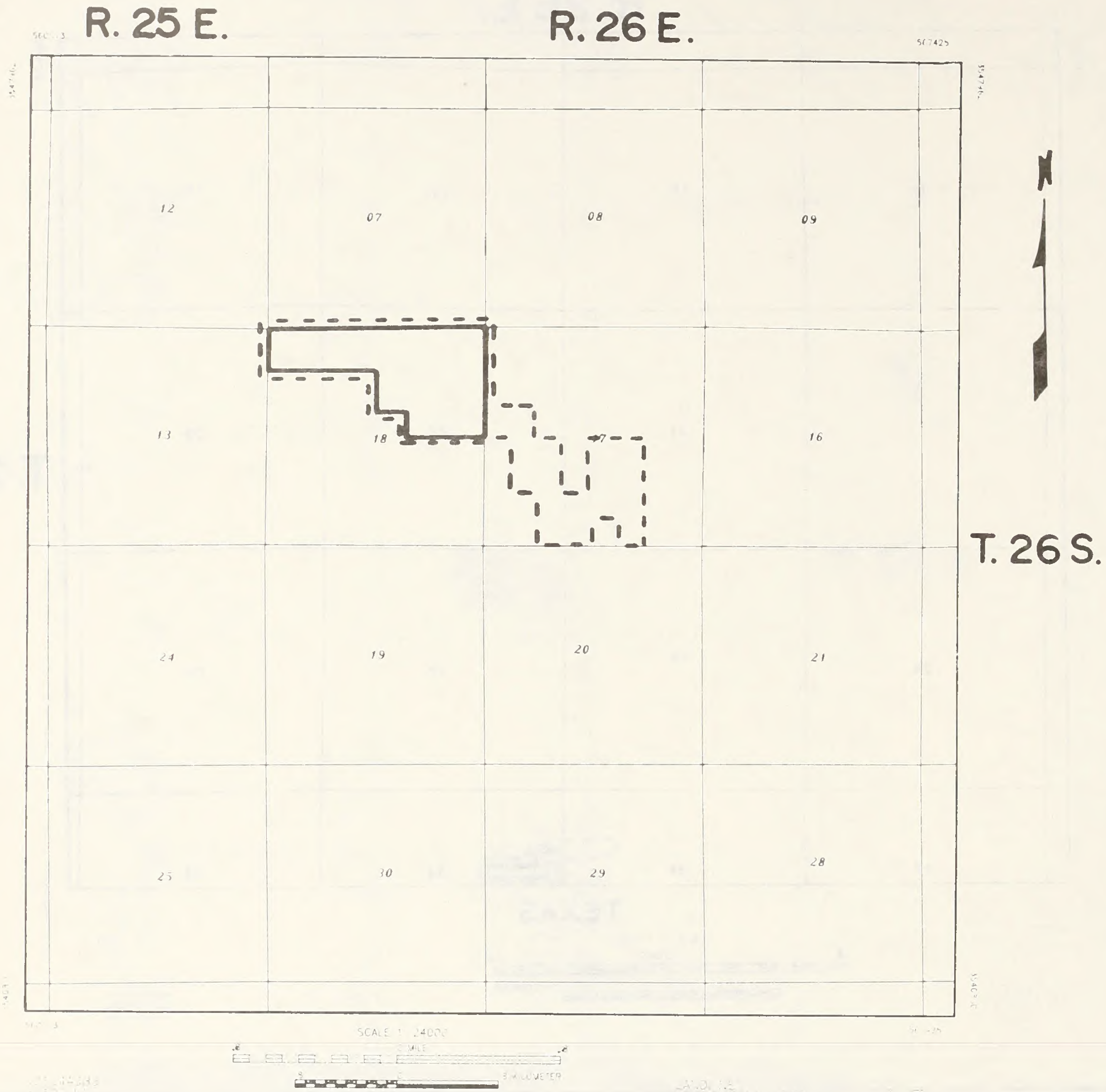
OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PUBLIC SURFACE AND MINERALS

SMA BOUNDARY

—— ALTERNATIVE B,C

- - - - ALTERNATIVE D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BEN SLAUGHTER DRAW SMA No. 6 (e)

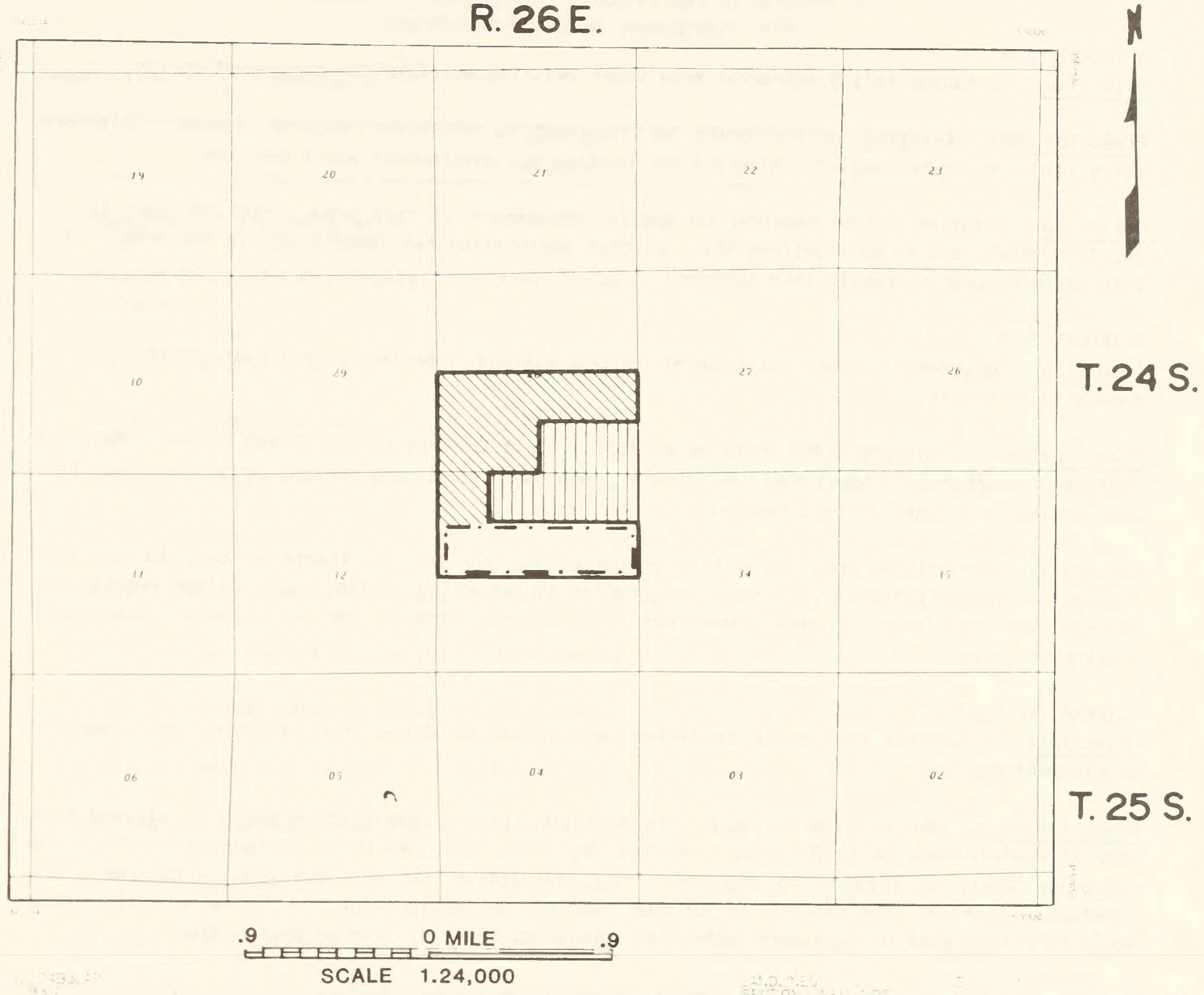
OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PRIVATE SURFACE AND MINERALS

SMA BOUNDARY

—— ALTERNATIVE B,C

– – – – ALTERNATIVE D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BLUE SPRING SMA No. 6 (f)

OWNERSHIP STATUS (Shown inside SMA boundary, only)

- ▭ PUBLIC SURFACE AND MINERALS
- ▨ NON-PUBLIC SURFACE / PUBLIC MINERALS

PROPOSED ACQUISITIONS

- ▨ NON-PUBLIC SURFACE ALT. C, D
- ▥ NON-PUBLIC SURFACE AND MINERALS ALT. C, D

SMA BOUNDARY

- —·—·— ALTERNATIVE B
- ——— ALTERNATIVE C, D

YESO HILLS
SMA No. 7

ALTERNATIVE A

Objective: To manage this 5,460-acres area under existing multiple use management policy.

Prescriptions: Existing policy would be followed to minimize resource damage. Standard stipulations would be applied. Minerals exploration and development would continue.

Rationale: Existing policy requires no special management of this area. Part of Sec. 13 and 24, T26S, R24E, are in an undefined KGS. Sulphur exploration has taken place in the area. This will maximize uses of public land acreage.

ALTERNATIVE B

Objective: To protect sensitive natural values without imposing significant constraints on commodity interests.

Prescriptions: Designate 5,460 acres as an ACEC. Limit ORV use to designated routes. Restrict surface disturbance, close area to mineral material sales and manage under limited fire suppression to prevent surface damage.

Rationale: Part of the area has a high potential for oil and gas (parts of Sec. 13 and 24). The rest is medium potential. Sulphur exploration is occurring in the area. Unique vegetation, geology and fragile soils need protection from adverse impacts due to resource development activities.

ALTERNATIVE C

Objective: To protect the area's sensitive natural values while still allowing for commodity development and use.

Prescriptions: Same as Alternative B. In addition, sulphur exploration would be allowed with special restrictions on 4,820 acres. Section 26, T25S, R24E, would be designated an RNA. The following would be applied to the RNA: NSO stipulation for oil and gas, withdrawal from locatable minerals, and closure to sulphur leasing and exploration. A 310-acre buffer zone would be established to accomodate potential subsidence activity from sulphur mining.

Rationale: Establishing the RNA would preserve a representation of the area's unique gypsophilic vegetation, fragile soils, and unique ecosystem. Mineral development and livestock grazing would be allowed with some limitations.

The gypsum soils, which are highly susceptible to wind and water erosion, would be provided with some protection in the ACEC. The unique gypsophilic vegetation, some of which are State Endangered Species, would also be provided some protection.

ALTERNATIVE D

Objective: To provide maximum protection of sensitive resource values.

Prescriptions: Same as for Alternative C, but acreage designated NSO for oil and gas, withdrawal from locatable minerals, and closed to other mineral leasing or prospecting permits would be expanded to the full 5,460 acres.

Rationale: Same as for Alternative C, but acreage designated NSO for oil and gas, withdrawal from locatable minerals, and closed to other mineral leasing or prospecting permits would be expanded to the full 5,460 acres.

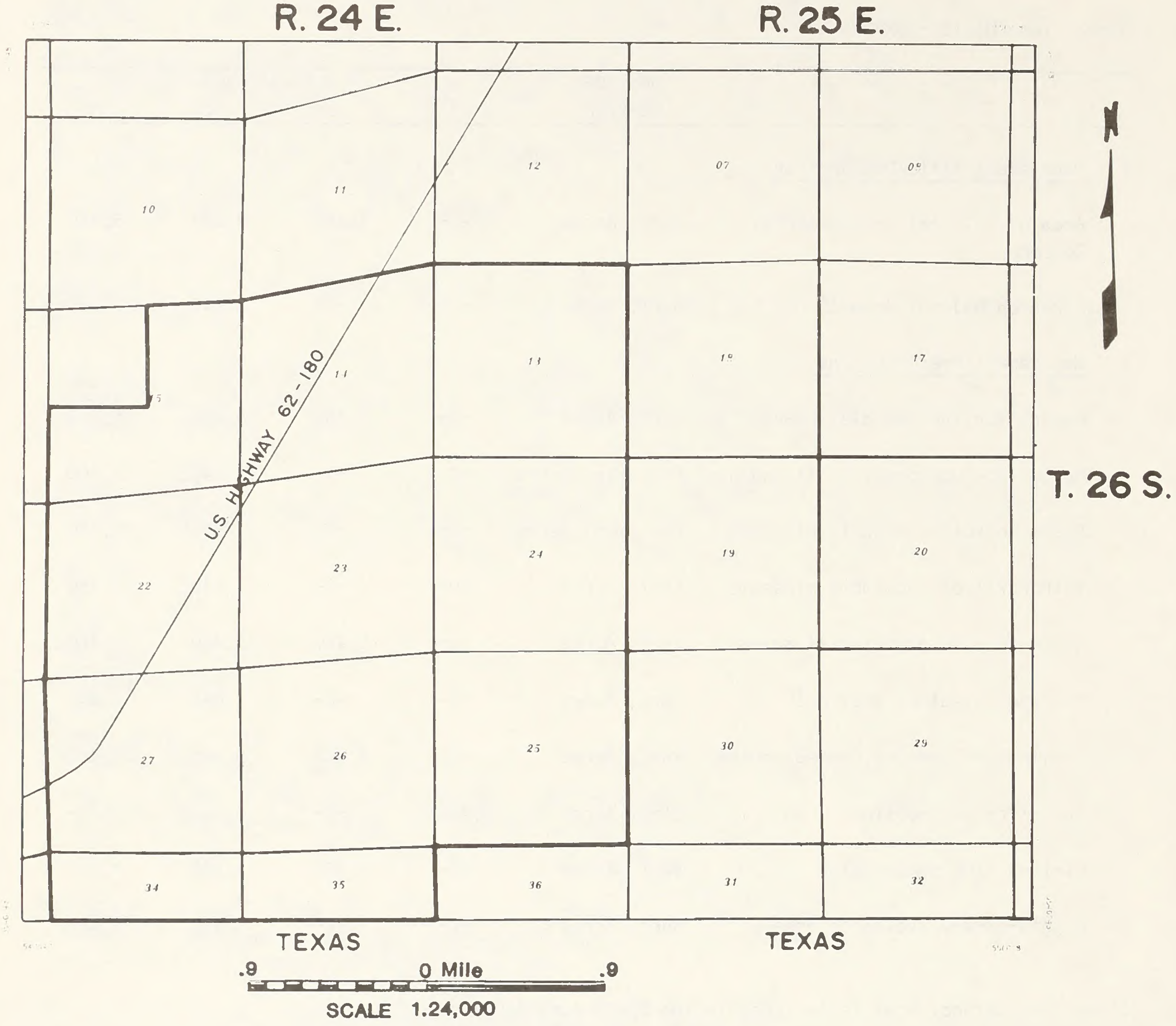
APPENDIX E-7
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Yeso Hills - SMA No. 7

	UNIT OF MEASURE	ALTERNATIVES			
		A	B	C	D
I Management Title/Designation					
Area of Critical Environmental Concern	Surf. Acres	-0-	5,460	5,460	5,460
Research Natural Area [1]	Surf. Acres	-0-	-0-	640	640
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	5,460	5,460	5,460
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	-0-	640[1]	5,460
Close to solid leasable minerals	Fed. Min. Acres	-0-	-0-	950[2]	5,460
Withdrawal of locatable minerals	Surf. Acres	-0-	-0-	640[1]	5,460
Close to mineral material sales	Surf. Acres	-0-	5,460	5,460	5,460
Exclude livestock grazing[1]	Surf. Acres	-0-	-0-	640	640
Limited ORV use-designated routes	Surf. Acres	-0-	5,460	5,460	5,460
Full fire suppression	Surf. Acres	5,460	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	5,460	5,460	5,460
Rights-of-way avoidance area	Surf. Acres	-0-	-0-	950	5,460

[1] Research Natural Area is included in the 5,460-acre ACEC.

[2] This includes the RNA and an adjacent buffer area to protect the RNA values from mineral extraction activities.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YESO HILLS SMA No. 7

OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PUBLIC

SMA BOUNDARY

—— ALTERNATIVE B, C, D

APPENDIX E-8

BLUNTNOSE SHINER HABITAT

SMA No. 8

ALTERNATIVE A

Objective: To continue multiple-use management throughout the proposed area under current management plans.

Prescriptions: Maintain under current management policies.

Rationale: This will maximize uses of the public land acreage.

ALTERNATIVE B

Objective: To protect the bluntnose shiner Critical Habitat. Protect 200 acres bordering the Pecos River from destruction and erosion caused by surface activity.

Prescriptions: NSO stipulations for the removal of hydrocarbons. The entire area would be closed to the removal of locatable and salable minerals. No surface disturbance or ORV use will be permitted in the entire area. Livestock grazing would be prohibited. Dispose of the 200 acres of public lands to another agency (New Mexico) or private organization (Nature Conservancy) with wildlife management goals and principles.

Rationale: These are necessary to avoid surface erosion or pollution that might endanger or destroy the wetland habitat essential for the survival of the bluntnose shiner. The bluntnose shiner is presently on the Rare I list, State of New Mexico, and under a review proposal for threatened species on the Federal level.

ALTERNATIVE C

Objective: Same as Alternative B.

Prescriptions: Same as for Alternative B except disposal of 200 acres of public land would not be considered.

Rationale: Same as Alternative B.

ALTERNATIVE D

Objective: Same as B and C.

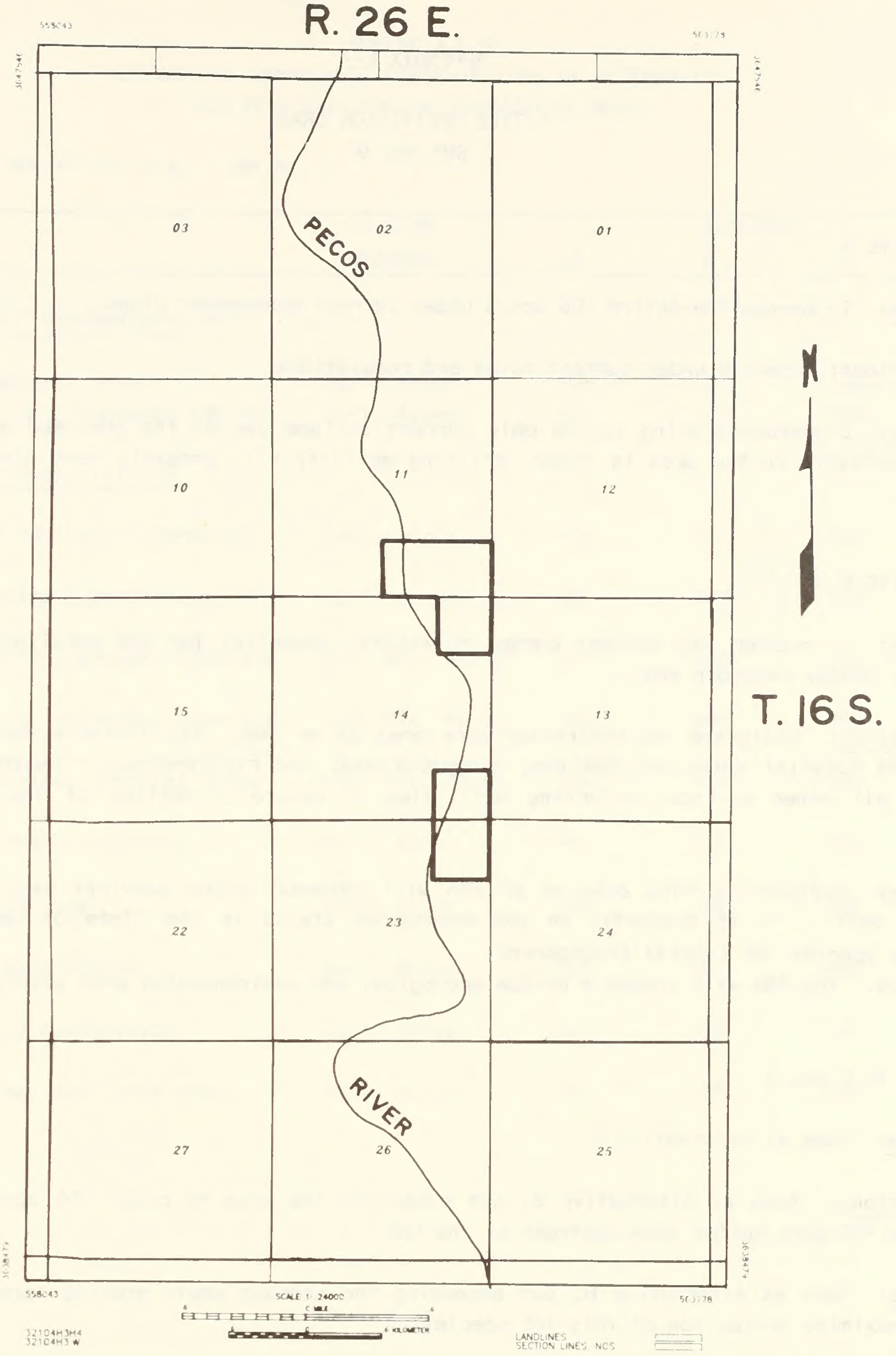
Prescriptions: Same and B and C except no grazing would be permitted on the entire area.

Rationale: Same as B and C.

APPENDIX E-8
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Bluntnose Shiner Habitat - SMA No. 8

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Threatened or Endangered Critical Habitat	Surf. Acres	-0-	200	200	200
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	200	200	200
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	200	200	200
Close to solid leasable minerals	Fed. Min. Acres	-0-	200	200	200
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	200	200	200
Close to mineral material sales	Fed. Min. Acres	-0-	200	200	200
Exclude livestock grazing	Surf. Acres	-0-	200	200	200
Closed to ORV use	Surf. Acres	-0-	200	200	200
Full fire suppression	Surf. Acres	-0-	200	200	200
Limited fire suppression	Surf. Acres	-0-	200	200	200
Rights-of-way avoidance area	Surf. Acres	-0-	200	200	200



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BLUNTNOSE SHINER HABITAT SMA No. 8

OWNERSHIP STATUS (Shown inside SMA boundry, only)

▭ PRIVATE

SMA BOUNDARY

—— ALTERNATIVE B, C, D

APPENDIX E-9

LITTLE MCKITTRICK DRAW
SMA No. 9

ALTERNATIVE A

Objective: To manage the entire 100 acres under current management plans.

Prescriptions: Operate under current rules and regulations.

Rationale: Livestock grazing is the only current surface use on the proposed area. Since oil and gas activity in the area is minor, drilling activity will probably have minimal impacts on the area.

ALTERNATIVE B

Objective: To protect and prevent damage to habitat essential for the survival of the Federal Notice of Review ramshorn snail.

Prescriptions: Designate the entire 100-acre area as an RNA. The 100-acre RNA will be closed to mineral material sales and ORV use, livestock use, and rights-of-way. Restrictions will be made on all other surface disturbing activities to ensure protection of the Ramshorn Snail Habitat.

Rationale: Designating this area as an RNA will enhance future survival and research of the ramshorn snail. It is presently on the endangered status in the State of New Mexico and a candidate species for Federal Endangered/Threatened. The RNA will create a unique ecological and environmental area within the CRA.

ALTERNATIVE C and D

Objective: Same as Alternative B.

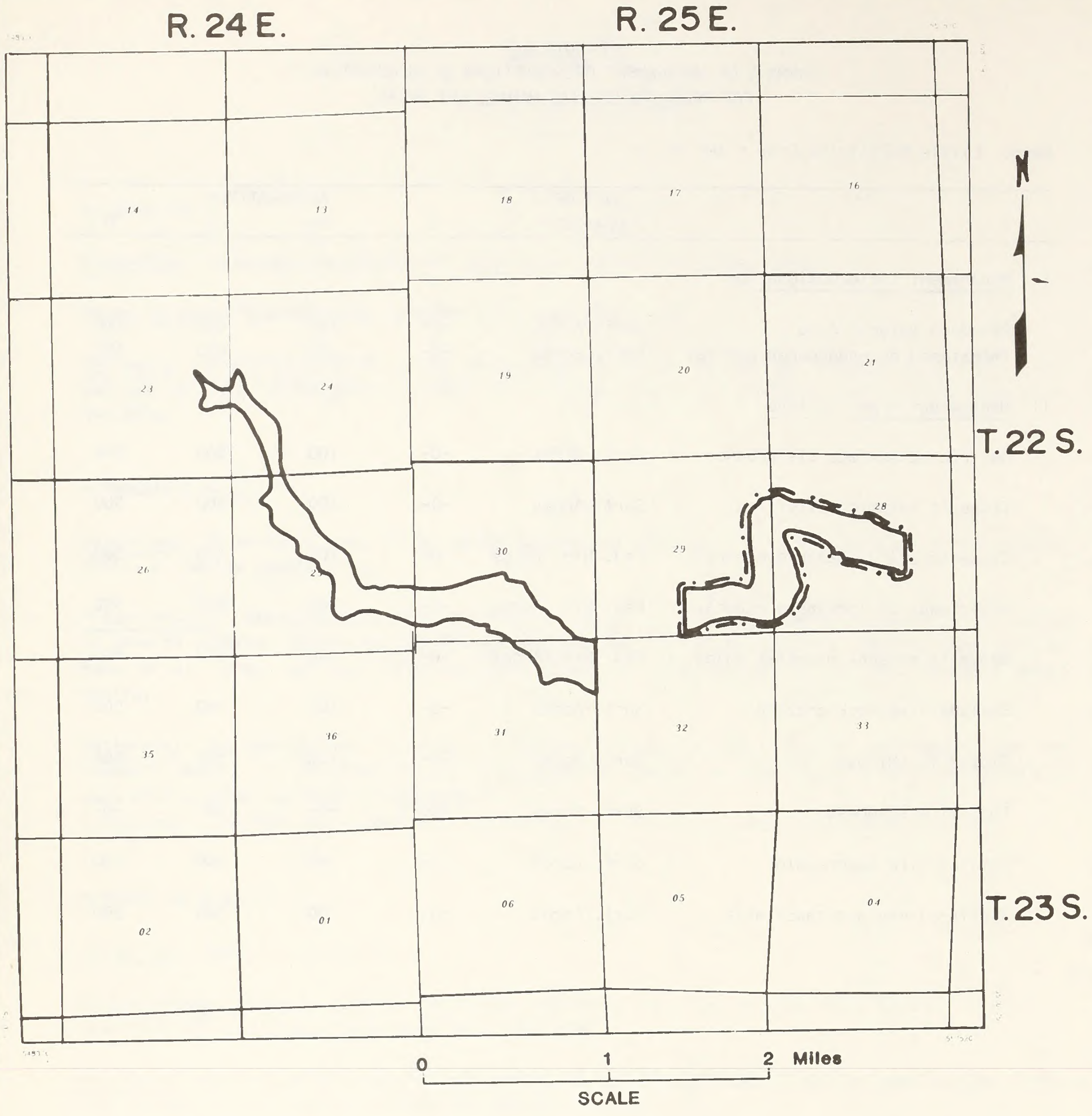
Prescriptions: Same as Alternative B, but expanding the area to cover 500 acres. This would provide a 400-acre buffer zone upstream of the RNA.

Rationale: Same as Alternative B, but expanding the acreage would provide large enough buffer zone to maximize protection of this T&E species.

APPENDIX E-9
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Little McKittrick Draw - SMA No. 9

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Research Natural Area	Surf. Acres	-0-	100	100	100
Threatened or endangered habitat	Surf. Acres	-0-	100	500	500
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	100	500	500
Close to seismic activities	Surf. Acres	-0-	100	500	500
Close to solid leasable minerals	Fed. Min. Acres	-0-	100	500	500
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	100	500	500
Close to mineral material sales	Fed. Min. Acres	-0-	100	500	500
Exclude livestock grazing	Surf. Acres	-0-	100	500	500
Closed to ORV use	Surf. Acres	-0-	100	500	500
Full fire suppression	Surf. Acres	500	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	100	500	500
Rights-of-way avoidance area	Surf. Acres	-0-	100	500	500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LITTLE McKITTRICK DRAW SMA No. 9

OWNERSHIP STATUS (Shown inside SMA boundary, only)

▭ PUBLIC

SMA BOUNDARY

— · — · — ALTERNATIVE B

——— ALTERNATIVE C, D

APPENDIX E-10

LAGUNA PLATA ARCHAEOLOGICAL DISTRICT

SMA No. 10

ALTERNATIVE A

Objective: To manage this nominated National Register Archaeological District to protect and preserve the important and sensitive cutlural resource values for research.

Prescriptions: This 3,360-acre area has been nominated as the Laguna Plata Archaeological District. At present, the District is closed to ORV use and 1,080 acres under an NOS stipulation for oil and gas production. In addition, the entire 3,360 acres would remain closed to seismic activities, closed to solid leasables except potash (with special stipulations on potash), and with restrictions on surface disturbance. The East Eddy-Lea MFP requires completion of the National Register nomination and development of an activity plan.

Rationale: The Laguna Plata Archaeological District is an excellent example of prehistoric exploitation of the dune-playa ecosystem. The management prescriptions outlined above were reviewed and approved for the East Eddy-Lea MFP.

ALTERNATIVE B

Objective: Same as for Alternative A, while allowing other compatible uses.

Prescriptions: Same as for Alternative A, with the following exceptions: a limited ORV designation to designated routes, the NSO and closures to seismic activities would be removed, and the area would be closed to mineral materials sales. Also, 1,080 acres would be closed to right-of-way development.

Rationale: Standard BLM policy and procedures satisfies the minimum legal requirements for cultural resources. The additional protective measures required in Alternative A inhibit industry production.

ALTERNATIVE C

Objective: Same as Alternative A.

Prescriptions: Same as for Alternative A with the exception that 1,280 acres of adjacent State land would be acquired to enhance protective management of the National Register Archaeological District. Also, the entire 3,360-acre area would have NSO stipulations for oil and gas and would be closed to mineral material sales. Limited fire suppression would be imposed to protect damage due to vehicular uses. Rights-of-way avoidance would be expanded to the full 3,360 acres.

Rationale: Same as for Alternative A.

ALTERNATIVE D

Objective: Same as for Alternatives A and C.

Prescriptions: Same as for Alternative C.

Rationale: Same as for Alternative C.

APPENDIX E-10
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE
FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Laguna Plata - SMA No. 10

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Archaeological District [1/]	Surf. Acres[2/]	3,360	3,360	3,360	3,360
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	3,360	3,360	3,360	3,360
No Surface Occupancy - oil and gas	Fed. Min. Acres	1,080[3/]	-0-	3,360	3,360
Close to seismic activities	Surf. Acres	3,360	-0-	3,360	3,360
Special Stipulation[4/]	Surf. Acres	3,360	3,360	3,360	3,360
Close to solid leasable minerals[5/]	Fed. Min. Acres	3,360	3,360	3,360	3,360
Close to mineral material sales	Fed. Min. Acres	-0-	3,360	3,360	3,360
Limited ORV use-designated routes	Surf. Acres	-0-	3,360	-0-	-0-
Closed to ORV use	Surf. Acres	3,360	-0-	3,360	3,360
Full fire suppression	Surf. Acres	3,360	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	3,360	3,360	3,360
Acquire non-Federal lands	Surf. Acres	-0-	-0-	1,280	1,280
Acquire non-Federal minerals	Surf. Acres	-0-	-0-	1,280	1,280
VRM Class III	Surf. Acres	-0-	3,360	3,360	3,360
Rights-of-way avoidance area	Surf. Acres	1,080	-0-	3,360	3,360

[1/] Presently determined eligible for inclusion in the National Register of Historic Places.
[2/] Represents public land surface acreage only.
[3/] Based on available information 8/20/85.
[4/] Special stipulations currently on potash leases requiring extensive mitigative work to protect cultural resources.
[5/] Excluding potash.

APPENDIX E-11

MAROON CLIFFS NATIONAL REGISTER ARCHAEOLOGICAL DISTRICT

SMA No. 11

ALTERNATIVE A

Objective: To manage this National Register Archaeological District to protect and preserve the important and sensitive cultural resource values for research.

Prescriptions: Continue the NSO designation for oil and gas development within the 1,880 acres of the archaeological district. Limit vehicular traffic to existing roads and trails within the entire 12,423-acre tract. The East Eddy-Lea MFP requires the additional survey of 8,263 acres and completion of the National Register District nomination.

Rationale: The Maroon Cliffs Archaeological District was established to preserve and manage a sample of prehistoric sites with considerable research potential. Current management practices are required by decisions made in the East Eddy-Lea MFP.

ALTERNATIVE B

Objective: Same as Alternative A while allowing other compatible uses.

Prescriptions: Same as for Alternative A, with the following exceptions: the 1,880-acre NSO stipulations for oil and gas production would be removed; 1,880 acres would be closed to seismic activities and rights-of-way; 12,423 acres would be closed to salable minerals and surface disturbance would be restricted within the Archaeological District. In addition, the remaining 8,263 acres would be surveyed in order to finalize the District boundaries and the National Register nomination would be completed.

Rationale: Same as for Alternative A.

ALTERNATIVE C

Objective: Same as for Alternative A.

Prescriptions: Same as for Alternative B, but NSO would be reinstated on 1,880 acres. An additional stipulation would be approved to non-NSO acreages requiring that no oil and gas development would be permitted within the District boundaries unless the sites to be impacted by this activity are systematically excavated and a representative sample of cultural materials are obtained. The right-of-way avoidance area would be expanded to 12,423 acres.

Rationale: Same as for Alternatives A and B.

ALTERNATIVE D

Objective: Same as for Alternatives A and C.

APPENDIX E-11
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Maroon Cliffs - SMA No. 11

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Archaeological District [1/]	Surf. Acres[3/]	12,423	12,423	12,423	12,423
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	12,423	12,423	12,423
No Surface Occupancy - oil and gas	Fed. Min. Acres	1,880	-0-	1,880	1,880
Close to seismic activities	Surf. Acres	-0-	1,880	1,880	1,880
Close to mineral material sales	Fed. Min. Acres	-0-	12,423	12,423	12,423
Limited ORV use-designated routes	Surf. Acres	12,423	12,423	12,423	12,423
Full fire suppression	Surf. Acres	12,423	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	12,423	12,423	12,423
Acquire non-Federal lands	Surf. Acres	-0-	-0-	-0-	1,686[3/]
Acquire non-Federal minerals	Surf. Acres	-0-	-0-	-0-	1,686[3/]
Rights-of-way avoidance area	Surf. Acres	-0-	1,880	12,423	12,423

[1/] Presently determined eligible for inclusion in the National Register of Historic Places. District boundaries may be smaller upon placement on register.

[2/] Represents public land surface acreage only.

[3/] Private, 80 acres; State, 1606 acres.

APPENDIX E-12

POTASH BULL WHEEL HISTORIC SITE
SMA No. 12

ALTERNATIVE A

Objective: To manage this nominated National Register Historic Site to protect and minimize determination of the unique Historic structure.

Prescriptions: This 4-acre tract has been nominated to the National Register of Historic Places. At present, vehicular traffic is limited to existing roads and trails. The Bull Wheel structure and associated caliche pad are surrounded by a chain link fence to discourage vandalism. It is also under full fire suppression. This management would continue under Alternative A.

Rationale: The Potash Bull Wheel is a unique example of early 20th century potash mining in Eddy County. The management prescriptions outlined above were approved for the East Eddy-Lea MFP.

ALTERNATIVE B

Objective: Same as for Alternative A, while increasing public awareness and understanding of the Historic structures.

Prescriptions: Same as for Alternative A, except that an interpretive sign would be developed for the site, the site would have NSO for oil and gas, it would be closed to mineral sales and would be an avoidance area for all rights-of-way.

Rationale: Same as for Alternative A. Additional prescriptions would add further protection to this historic site.

ALTERNATIVES C and D

Objective: Same as for Alternative B.

Prescriptions: Same as for Alternative B.

Rationale: Same as for Alternative B.

APPENDIX E-12
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Potash Bull Wheel - SMA No. 12

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Historic Site [1/]	Surf. Acres	4	4	4	4
II Management Prescriptions					
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	4	4	4
Close to mineral material sales	Fed. Min. Acres	-0-	4	4	4
Limited ORV use-designated routes	Surf. Acres	4	4	4	4
Full fire suppression	Surf. Acres	4	4	4	4
Rights-of-way avoidance area	Surf. Acres	-0-	4	4	4

[1/] Recemt determined eligible for inclusion in the National Register of Historic Places.

APPENDIX E-13

LOS MEDANOS RAPTOR AREA

SMA No. 13

ALTERNATIVE A

Objective: Continue under existing multiple use management.

Prescriptions: Continue oil and gas production in undefined KGS areas and producing units. Also continue potash production, mineral production, and livestock grazing.

Rationale: This is a highly productive land use area partially due to the size (89,360 acres).

ALTERNATIVE B

Objective: To avoid and lessen impacts upon raptor populations (breeding and nesting activities) from resource development and production.

Prescriptions: Prohibit removal of trees exceeding 3 meters high within entire 89,360-acre SMA. Restrict seismic and drilling activities to within 1/4 mile of active raptor nests from April 1 to December 30. Limit brush control activities to specific target species and specific areas.

Rationale: Restrictions and stipulations are a sensible management scheme to cover the 89,360 acres. This provides for limited protection for an internationally significant wildlife resource while allowing maximum production of resources.

ALTERNATIVE C

Objective: Same as for Alternative B.

Prescriptions: Same as for Alternative B.

Rationale: Same as for Alternative B.

ALTERNATIVE D

Objective: Same as for Alternative C.

Prescriptions: Same as for Alternative C. In addition, incorporate limited/seasonal ORV restrictions to designated routes.

Rationale: Same as for Alternative C. ALso, this would minimize raptor disturbance from ORV activity as well as mineral production.

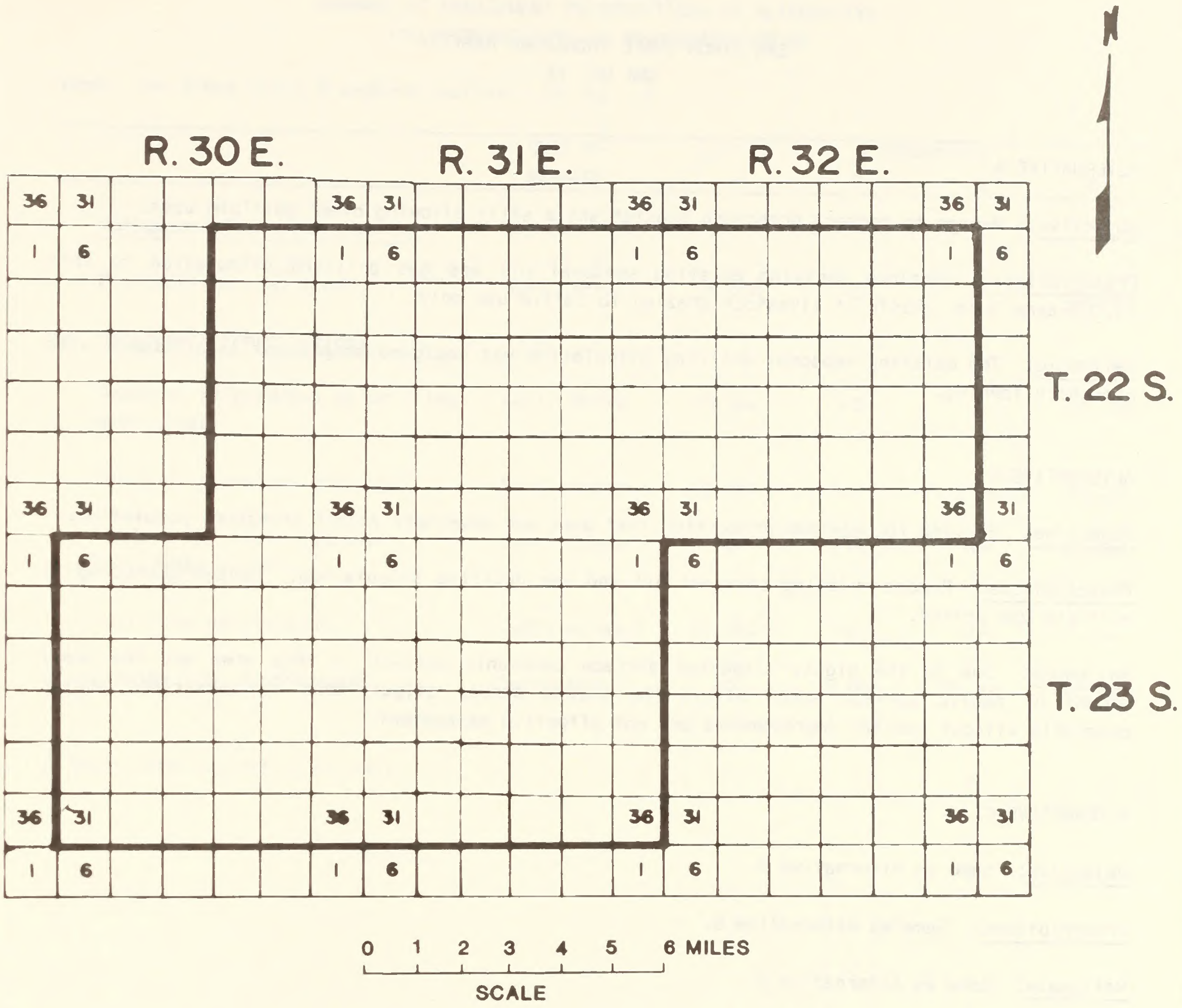
APPENDIX E-13

SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Los Medanos Raptor Area - SMA No. 13

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Raptor Management Area	Surf. Acres	-0-	89,360	89,360	89,360
II Management Prescriptions					
Restricted surface disturbance[1/]	Surf. Acres	-0-	89,360	89,360	89,360
Seasonal stipulation on drilling activities[1/]	Surf. Acres	-0-	89,360	89,360	89,360
Seasonal closure to seismic activities[1/]	Surf. Acres	-0-	89,360	89,360	89,360
Limited ORV use-seasonal, designated routes	Surf. Acres	-0-	-0-	-0-	89,360
Full fire suppression	Surf. Acres	89,360	89,360	89,360	89,360

[1/] Restriction within the 89,360 apply to 1/4 mile radius during active raptor nesting period April 1 to December 30 only.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LOS MEDANOS RAPTOR AREA SMA No. 13

SMA BOUNDARY

—— ALTERNATIVES B, C, D

SAN SIMON SWALE PRONGHORN HABITAT
SMA No. 14

ALTERNATIVE A

Objective: Manage to protect pronghorn habitat while still allowing other multiple uses.

Prescriptions: Continue applying existing seasonal oil and gas drilling stipulation to this 25,000-acre area. Restrict livestock grazing to cattle use only.

Rationale: The existing seasonal drilling stipulation was designed to prevent interference with pronghorn fawning.

ALTERNATIVE B

Objective: Provide for maximum production that does not adversely affect pronghorn population.

Prescriptions: Remove existing seasonal oil and gas drilling stipulation. Manage according to multiple use policy.

Rationale: Due to the highly dispersed surface ownership pattern in this area and the small amount of public surface acres within the 25,000 acres, stipulations on subsurface public ownership without habitat improvements are not effective management.

ALTERNATIVE C

Objective: Same as Alternative B.

Prescriptions: Same as Alternative B.

Rationale: Same as Alternative B.

ALTERNATIVE D

Objective: Same as Alternative A.

Prescriptions: Same as Alternative A. In addition, incorporate limited/seasonal ORV restrictions to designated routes.

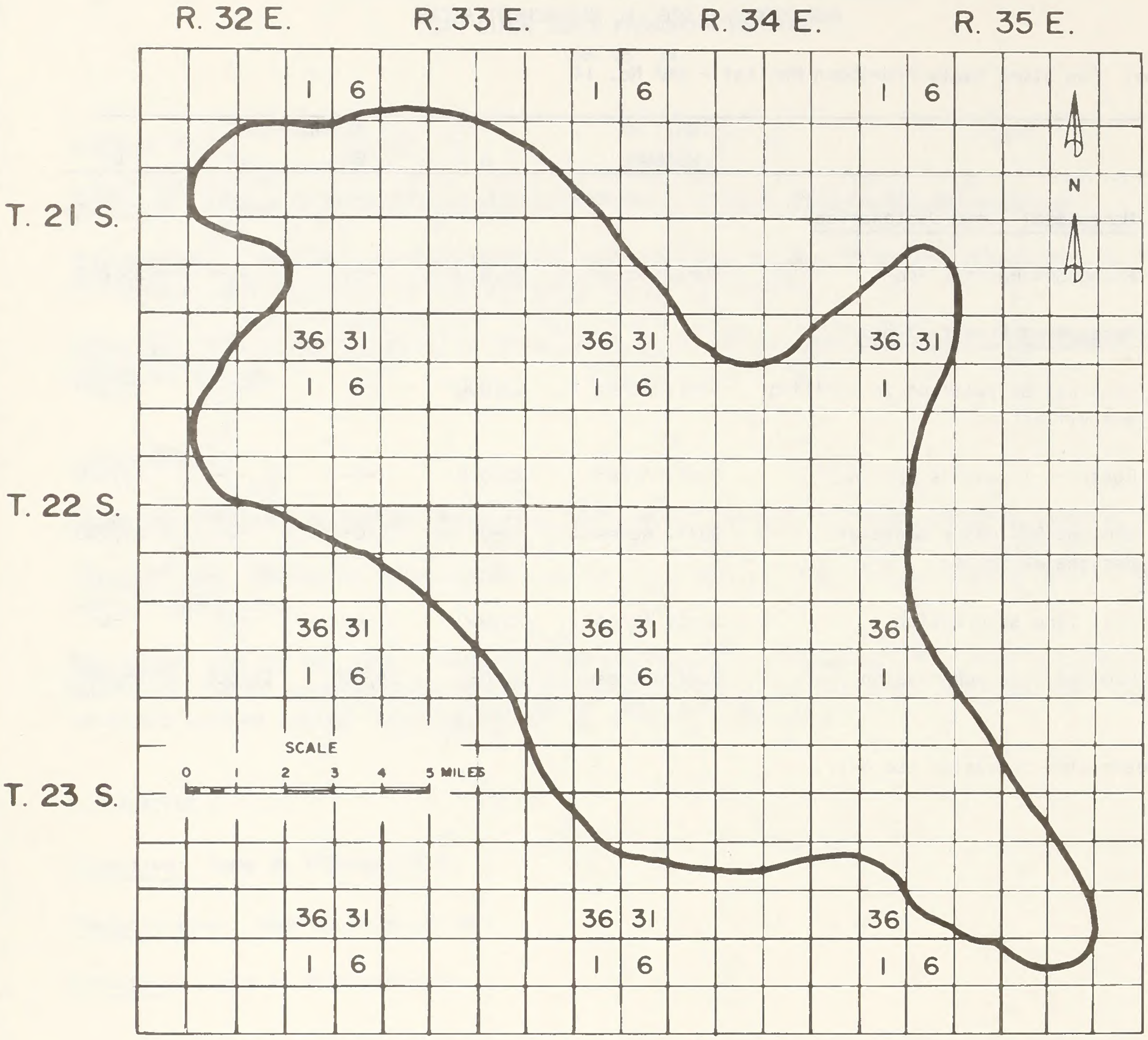
Rationale: Same as Alternative A. In addition, this would limit disturbance of pronghorn during fawning periods from ORV traffic.

APPENDIX E-14
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: San Simon Swale Pronghorn Habitat - SMA No. 14

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Pronghorn Habitat Area	Surf. Acres	25,000	-0-	-0-	25,000
II Management Prescriptions					
Seasonal stipulation on drilling activities	Surf. Acres	25,000	-0-	-0-	25,000
Restrict livestock grazing[1/]	Surf. Acres	25,000	-0-	-0-	25,000
Limited ORV use - seasonal, designated routes	Surf. Acres	-0-	-0-	-0-	25,000
Full fire suppression	Surf. Acres	25,000	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	25,000	25,000	25,000

[1/] Restricted to cattle use only.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SAN SIMON PRONGHORN HABITAT SMA No. 14

SMA BOUNDARY

— ALL ALTERNATIVES

APPENDIX E-15

PHANTOM BANKS HERONRIES AREA
SMA No. 15

ALTERNATIVE A

Objective: Continue under existing multiple-use management.

Prescriptions: Continue oil and gas development in undefined KGS areas and producing units, and continue mineral production.

Rationale: This is a large productive land-use area with a variety of multiple use actions taking place. Continued management would allow continuation of these actions.

ALTERNATIVE B

Objective: To advance protection for great blue heronries under existing multiple use management.

Prescriptions: Implement stipulations of seasonal oil and gas development restriction and closure to seismic April 1 to July 30 within 1/4 mile of a known heronry. Restrict surface disturbance around known heronries to be applied case-by-case.

Rationale: Restrictions and stipulations are a sensible management scheme to cover the 26,800 acres. This will protect heronries while allowing high production of resources.

ALTERNATIVE C

Objective: Same as for Alternative B.

Prescriptions: Same as for Alternative B, but with an additional seasonal limitation on ORV use (designated routes).

Rationale: Same as for Alterntive B but the added seasonal ORV limitation would help minimize disturbance of nesting birds.

ALTERNATIVE D

Objective: To maximize protection of great blue heronies while still allowing compatible uses.

Prescriptions: Same as for Alternative C. In addition, seasonal restrictions on drilling activities and closure to seismic would be applied within 1/2 mile of known heronries.

Rationale: Same as for Alternative C. In addition, the increased buffer zones surrounding heronries will enhance the probability of successful nesting and hatching.

APPENDIX E-15
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

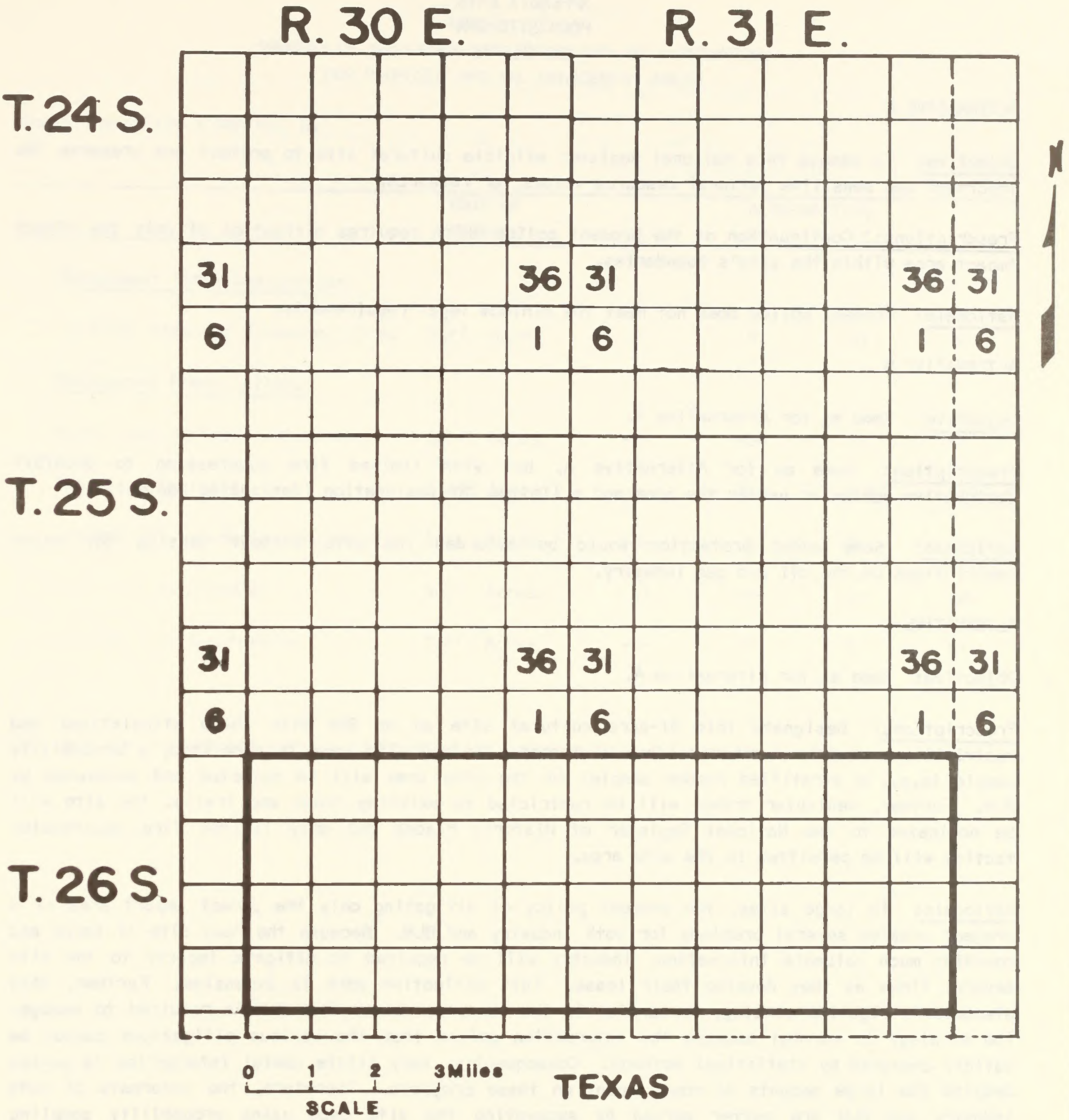
Name: Phantom Bank Heronries Area - SMA No. 15

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Heronries Habitat Area	Surf. Acres	-0-	26,800	26,800	26,800
II Management Prescriptions					
Restricted surface disturbance[1]	Surf. Acres	-0-	26,800	26,800	26,800
Seasonal stipulation on drilling activities	Surf. Acres	-0-	26,800[2]	26,800[2]	26,800[3]
Seasonal closure to seismic activities	Surf. Acres	-0-	26,800[2]	26,800[2]	26,800[3]
Limited ORV use-designated routes - seasonal	Surf. Acres	-0-	-0-	26,800	26,800
Full fire suppression	Surf. Acres	26,800	26,800	26,800	26,800

[1] Special stipulations would apply year-round to known heronies and would be applied case-by-case.

[2] Applies to 1/4 mile radius (126 ac.) around active heronries within the 26,800 ac. SMA.

[3] Applies to 1/2 mile radius (502 ac.) around active heronries within the 26,800 ac. SMA.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PHANTOM BANKS HERONRIES AREA SMA No. 15

SMA BOUNDARY

—— ALTERNATIVE B, C, D

APPENDIX E-16
POCO SITE SMA
SMA No. 16

ALTERNATIVE A

Objective: To manage this National Register eligible cultural site to protect and preserve the important and sensitive cultural resource values for research.

Prescriptions: Continuation of the present policy which requires mitigation of only the direct impact area within the site's boundaries.

Rationale: Present policy does not meet the minimum legal requirements.

ALTERNATIVE B

Objective: Same as for Alternative A.

Prescription: Same as for Alternative A, but with limited fire suppression to prohibit destructive vehicular use in the area and a limited ORV designation (designated routes).

Rationale: Some added protection would be afforded the site without causing any major restrictions on the oil and gas industry.

ALTERNATIVE C

Objective: Same as for Alternative A.

Prescriptions: Designate this 51-acre cultural site as an SMA with these stipulations and restrictions: before further surface disturbance in the site area is permitted, a probability sample (e.g., a stratified random sample) of the site area will be selected and excavated by BLM. Further, vehicular travel will be restricted to existing roads and trails, the site will be nominated to the National Register of Historic Places and only limited fire suppression tactics will be permitted in the site area.

Rationale: In large sites, the present policy of mitigating only the direct impact area of a project creates several problems for both industry and BLM. Because the Poco Site is large and contains much valuable information, industry will be required to mitigate impacts to the site several times as they develop their lease. This mitigative work is expensive. Further, this piecemeal mitigative strategy is harmful to the resource values that BLM is required to manage. The strategy is harmful because the information gained from the various mitigations cannot be validly compared by statistical methods. Consequently, very little useful information is gained despite the large amounts of money spent on these projects. Therefore, the interests of both industry and BLM are better served by excavating the site once using probability sampling methods.

ALTERNATIVE D

Sames as for Alternative C.

APPENDIX E-16

SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Poco Site - SMA No. 16

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Cultural Resource Management Area	Surf. Acres	-0-	51	51	51
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	-0-	51	51
Special Stipulation	Surf. Acres	-0-	-0-	51[1]	51[1]
Limited ORV use-designated routes	Surf Acres	-0-	51	51	51
Full fire suppression	Surf. Acres	51	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	51	51	51

[1] No surface disturbance until a representative sample of the entire site has been excavated.

APPENDIX E-17
BEAR GRASS DRAW CULTURAL AREA
SMA No. 17

ALTERNATIVE A

Objective: To manage the National Register eligible cultural sites in this area to protect and preserve the important and senstive cultural resource values for research.

Prescriptions: Continuation of the present policy which requires mitigation of only the direct impact area within a site's boundaries.

Rationale: Present policy does not meet the minimum legal requirements.

ALTERNATIVE B

Objective: Same as for Alternative A.

Prescriptions: Manage 320 acres containing two cultural sites, with these stipulations and restrictions; before further surface disturbance in these site areas is permitted, a probability sample of the site areas will be selected and excavated. Further, vehicular travel will be restricted to existing roads and trails, these sites will be nominated to the National Register of Historic Places and only limited fire suppression tactics will be permitted in these site areas.

Rationale: In large sites, the present policy of mitigating only the direct impact area of a project creates several problems for both industry and the BLM. Because the sites in the Bear Grass Draw area are very large and contain much valuable information, industry has already been required to mitigate impacts to the same site several times as they developed their lease. This mitigative work is expensive and, this piecemeal mitigative strategy has proved harmful to the resource values that BLM is required to manage. Landis (1984), in the latest of a series of mitigations conducted at LA 17041, demonstrates that this piecemeal strategy is harmful to other resource values because the information gained from the various mitigations cannot be validly compared by statistical methods. Consequently, very little information has been gained about LA 17041 despite the large amounts of money spent on mitigation. Therefore, the interests of both industry and BLM are better served by excavating these sites once using probablity sampling methods.

ALTERNATIVE C

Objective: Same as for Alternatives A and B.

Prescriptions: Manage 1780 acres with these stipulations and restrictions: before further surface disturbance in the SMA is permitted, BLM will develop an activity plan requiring a survey to identify the most significant cultural areas and a probability sample for these areas will be selected and excavated. On completion of the activity plan, some areas may be designated as ACEC; depending on management evaluation of these areas at that time. The other stipulations and restrictions for the 1,780-acre area are the same as for Alternative B.

Rationale: Same as for Alternative B with the additional understanding that a survey of the expanded acreage will enhance BLM's and industries' options by locating the most significant cultural areas. Present survey information indicates that several very large sites with significant cultural deposits are present. By enlarging the protected boundaries, BLM can more effectively address the dilemma posed by these large sites.

ALTERNATIVE D

Objective: Same as Alternatives A-C, but maximize protection of cultural resources in the Bear Grass Draw Area.

Prescriptions: Same as for Alternative C but expand the protected area to 3,040 acres.

Rationale: Same as for Alternative C.

APPENDIX E-17
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Bear Grass Draw - SMA No. 17

	UNIT OF MEASURE	A	B	C	D
I Management Title/Designation					
Cultural Resource Management Area	Surf. Acres	-0-	320	1,780	3,040
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	320[1/]	1,780[1/]	3,040[1/]
Limited ORV use-designated routes	Surf. Acres	-0-	320	1,780	3,040
Limited fire suppression	Surf. Acres	-0-	320	1,780	3,040

[1/] No surface disturbance until a representative sample of the affected site has been excavated.

APPENDIX E-18
PECOS RIVER/CANYONS COMPLEX
SMA No. 18

ALTERNATIVE A

Objective: Provide for diversified multiple resources uses, with emphasis on commodity production while providing some protection of sensitive resource values.

Prescriptions: Pierce Canyon (1,215 acres) is designated closed to ORV use, and VRM Class II objectives have been designated for the area. This management would continue.

Rationale: The ORV closure provides some protection of fragile and varied soils, and for high scenic and cultural values associated with Pierce Canyon. The majority of the area is identified for high oil and gas production potential.

ALTERNATIVE B

Objective: Protect sensitive and unique natural and cultural resources and scenic qualities, and provide research opportunities within the Pecos River/Canyons Complex while still providing for commodity development.

Prescriptions: Establish a 4,390-acre ACEC with restricted surface disturbance, including a 1,520-acre RNA. Withdraw from locatable minerals, apply NSO stipulation for oil and gas leases, and close to solid leasable minerals, mineral material sales, and rights-of-way development on 3,300 acres. Maintain the 1,215-acre ORV closure and limit ORV use to designated routes on the remaining 3,175 acres. Exclude livestock within the proposed RNA. Manage 3,300 acres in accordance with VRM class II objectives and 1,090 acres by VRM Class III objectives. Limited fire suppression would be applied to prevent resource damage from vehicular use.

Rationale: Two large distinctive limestone and sandstone canyons (Pierce and Cedar) converge with a free-flowing section of the Pecos River to provide a unique landscape in southeastern New Mexico. Important sensitive resource values include fragile and varied soils, prime habitat for several New Mexico Endangered animal and plant species, high scenic qualities associated with Pierce and Cedar canyons, and large and complex cultural associations. The management prescriptions would allow for oil and gas exploration and development activities to occur on the mesas between the two canyons while providing protection of more sensitive resource values.

ALTERNATIVE C

Objective: Emphasize protection of sensitive and unique natural and cultural resources and scenic qualities, and provide research opportunities while still allowing other compatible uses.

Prescriptions: Same as for Alternative B, except that the ACEC would increase to 5,190 acres by increasing public lands in the RNA by 800 acres to 2,320 acres. There would be a respective 800-acre increase of withdrawal of locatable minerals, the NSO stipulation, limited ORV use designation, closure to solid leasable minerals and rights-of-way development, exclusion of livestock, VRM Class II, and limited fire suppression. Closure to mineral material sales would increase to 5,190 acres. In addition, there would be acquisition of 840 acres of State land, 200 acres of state minerals, and 120 acres of private land and minerals.

Rationale: Same as for Alternative C, except the increased acreage and associated restrictions maximize protection of all the valued resources.

ALTERNATIVE D

Objective: Maximize protection of sensitive and unique natural and cultural resources, ecosystem relationships and scenic qualities, and provide research opportunities.

Prescriptions: Same as for Alternative C, except that the entire ACEC (5,190 acres) would be subject to closure to solid leasable minerals, withdrawal of locatable minerals, and VRM Class II objectives. The NSO stipulation and closure to rights-of-way development would apply to 4,870 acres (320 acres currently in production would not be affected).

Rationale: Same as for Alternative C, except the increased acreage and associated restrictions maximizes protection of all the valued resources.

APPENDIX E-18
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Pecos River/Canyons Complex - SMA No. 18

	UNIT OF MEASURE	ALTERNATIVES A	 B	 C	 D
I Management Title/Designation					
Area of Critical Environmental Concern	Surf. Acres	-0-	4,390	5,190	5,190
Research Natural Area [1]	Surf. Acres	-0-	1,520	2,320	2,320
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	4,390	5,190	5,190
No Surface Occupancy - oil and gas	Fed. Min. Acres	-0-	3,300	4,100	4,870
Close to solid leasable minerals	Fed. Min. Acres	-0-	3,300	4,100	5,190
Withdrawal of locatable minerals	Fed. Min. Acres	-0-	3,300	4,100	5,190
Close to mineral material sales	Fed. Min. Acres	-0-	3,300	5,190	5,190
Exclude livestock grazing[2]	Surf. Acres	-0-	1,520	2,320	2,320
Limited ORV use-designated routes	Surf. Acres	-0-	3,175	3,975	3,975
Closed to ORV use	Surf. Acres	1,215	1,215	1,215	1,215
Full fire suppression	Surf. Acres	5,190	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	4,390	5,190	5,190
Acquire nonFederal lands	Surf. Acres	-0-	-0-	960	960
Acquire nonFederal minerals	Min. Acres	-0-	-0-	320	320
VRM Class II	Surf. Acres	2,300	3,300	4,100	5,190
VRM Class III	Surf. Acres	2,300	1,090	1,090	-0-
Rights-of-way avoidance area	Surf. Acres	-0-	3,300	4,100	4,870

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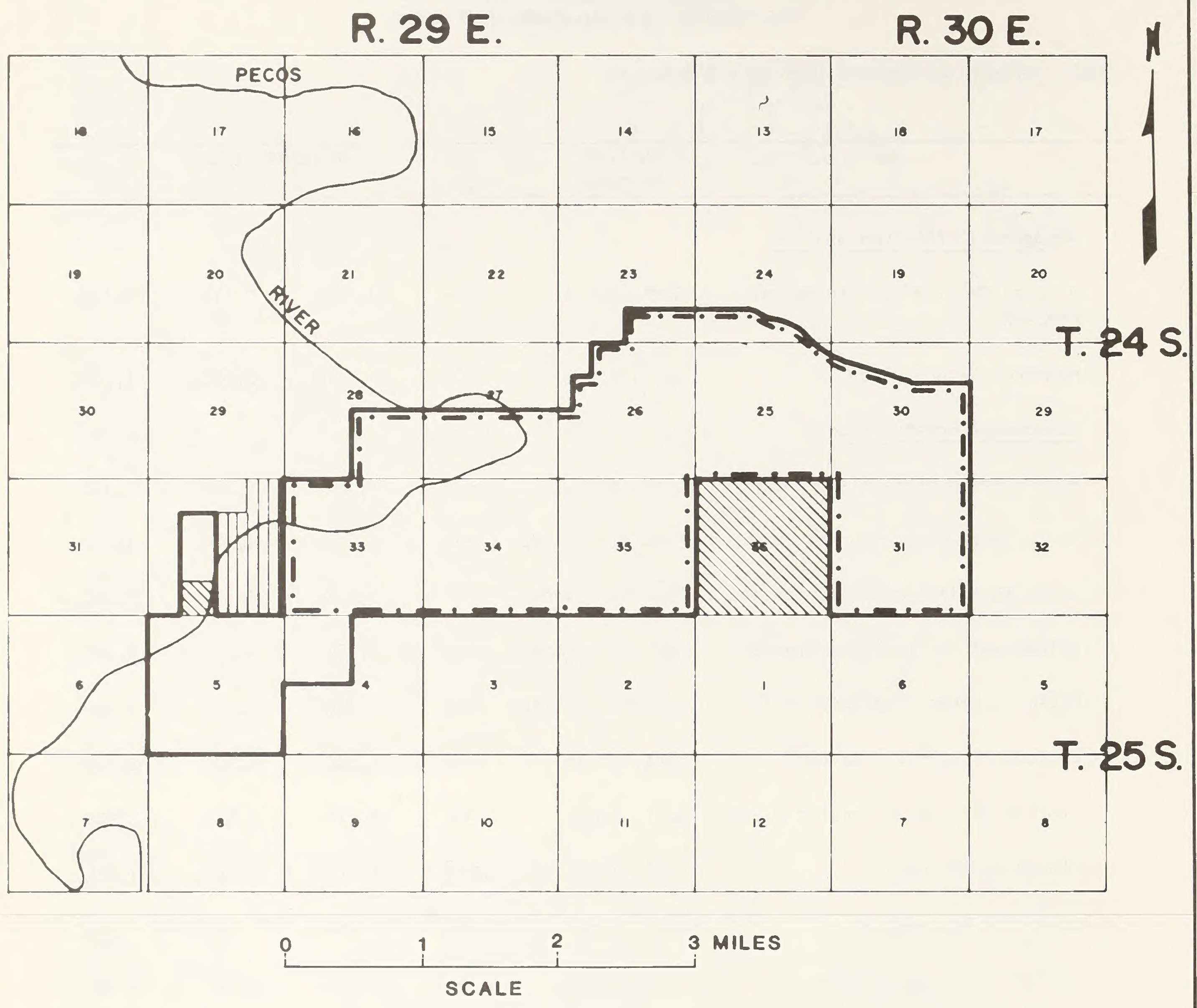
[1] Acreage is included in ACEC acreage figure.

[2] Within the proposed RNA.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PECOS RIVER / CANYONS COMPLEX SMA No. 18

OWNERSHIP STATUS (Shown inside SMA boundary, only)

☐ PUBLIC

▨ NON·PUBLIC SURFACE / PUBLIC MINERALS

PROPOSED ACQUISITIONS

▨ NON·PUBLIC SURFACE ALT. C, D

▥ NON·PUBLIC SURFACE AND MINERALS ALT. C, D

SMA BOUNDARY

—·— ALTERNATIVE B

—— ALTERNATIVE C, D

APPENDIX E-19

POPE'S WELL NATIONAL REGISTER HISTORIC SITE

SMA No. 19

ALTERNATIVE A

Objective: To manage this National Register Historic Site to protect and preserve the important and sensitive historic resources for research and education.

Prescriptions: Continue the NSO restrictions on oil and gas and full fire suppression within the 40-acre SMA. Complete National Register nomination for the site.

Rationale: Present management policy satifies the minimum legal requirements. This 40-acre historic site has been declared eligible for the National Register of Historic Places.

ALTERNATIVE B

Objective: Same as for Alternative A.

Prescriptions: Same as for Alternative A but with limited fire suppression and ORV closure on the 40-acre designated area.

Rationale: These added stipulations would adequately protect this historic site.

ALTERNATIVE C

Objective: Same as for Alternatives A and B.

Prescriptions: Same as for Alternative B.

Rationale: Same as for Alternative B.

ALTERNATIVE D

Objective: Same as for Alternatives A-C.

Prescriptions: Same as for Alternatives B and C.

Rationale: Same as for Alternatives B and C.

APPENDIX E-19
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Pope's Well - SMA No. 19

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Historic Site [1]	Surf. Acres	40	40	40	40
II Management Prescriptions					
No Surface Occupancy - oil and gas	Fed. Min. Acres	40	40	40	40
Close to ORV use	Surf. Acres	-0-	40	40	40
Full fire suppression	Surf. Acres	40	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	40	40	40
Rights-of-way avoidance area	Surf. Acres	-0-	40	40	40

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[1] Presently nominated to National Register of Historic Places.

APPENDIX E-20

GUADALUPE ESCARPMENT SCENIC AREA

SMA No. 20

ALTERNATIVE A

Objective: Continue multiple-use development of the area with impacts to visual resources mitigated on project-by-project basis.

Prescriptions: Evaluate proposed actions on a case-by-case basis with special attention to minimizing visual impacts.

Rationale: Although there presently are no specific restrictions on the types or magnitude of resource uses within the area, the area has high visual sensitivity from primary viewing points along U.S. Highway 62/180, the Forest Service (FS), Carlsbad Caverns National Park, and BLM land along the Guadalupe Escarpment.

ALTERNATIVE B

Objective: Same as for Alternative A, but to emphasize visual resource values along the southwest portion of the escarpment while still allowing multiple-use development to occur.

Prescriptions: Establish an 8,820-acre scenic area. Limit ORV use to designated routes, apply limited fire suppression techniques, and restrict surface disturbing activities. Require a lease development plan for any proposed leasable minerals development, subject to special stipulations as appropriate to minimize visual impacts. Manage the area in accordance with VRM Class III objectives.

Rationale: This area is predominantly contiguous public land generally paralleling the Guadalupe Escarpment, thus providing for consistent management of highly sensitive visual resources. It is in the immediate visual foreground as viewed from several key observation points along the adjacent Guadalupe Escarpment on FS land proposed for protective management, BLM land proposed for protective management (Lonesome Ridge SMA - see SMA No. 5, this appendix), from within the designated wilderness of Carlsbad Caverns National Park, and from U.S. Highway 62/180. Visual intrusions in the area are minimal, generally, but resource development could occur, particularly minerals development (oil and gas and solid leasable minerals).

ALTERNATIVE C

Objective: Emphasize the protection of visual resource values associated with the Guadalupe Escarpment while still allowing for compatible multiple use development to occur.

Prescriptions: Establish a 49,570-acre scenic area, which would be divided into two management zones: Zone 1 and Zone 2. Management prescriptions would include the following:

GUADALUPE ESCARPMENT SCENIC AREA
SMA No. 20
(continued)

Both zones: Limit ORV use to designated routes, apply limited fire suppression, and restrict surface disturbing activities.

Zone I (8,820 public land surface/Federal minerals and 2,880 acres private land surface/federal minerals): Close to solid leasable minerals and mineral material sales. Apply NSO stipulations for all oil and gas. Manage the area in accordance with VRM Class II objectives and maintain semiprimitive motorized recreation opportunity settings.

Zone 2 (40,970 acres public land surface/Federal minerals and 11,930 acres private land surface/Federal minerals): Require a lease development plan for proposed oil and gas minerals development, subject to special stipulations as appropriate to minimize visual impacts. Close the area to solid leasable minerals development. Manage the area in accordance to VRM Class III objectives.

Rationale: Similar to Alternative B for Zone I. Zone 2 also has a high level of visual sensitivity. The Zone 2 area is subject to high levels of public viewing from several key observation points, including U.S. Highway 62/180, several county roads, and from within the high use area of Carlsbad Caverns National Park. These management prescriptions would maximize protection of visual qualities in Zone I and emphasize minimizing visual impacts within Zone 2 while allowing limited multiple-resource development activities to occur.

ALTERNATIVE D

Objective: Same as Alternative C.

Prescriptions: Same as for Alternative C.

Rationale: Same as for Alternative C.

APPENDIX E-20
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Guadalupe Escarpment Scenic Area - SMA No. 20

	UNIT OF MEASURE	ALTERNATIVES			
		A	B	C	D
I Management Title/Designation					
Guadalupe Escarpment Scenic Area	Surf. Acres	-0-	8,820	49,570	49,570
II Management Prescriptions					
Restricted surface disturbance	Surf. Acres	-0-	8,820	49,570	49,570
No Surface Occupancy - oil and gas	Surf. Acres	-0-	120	11,700[1]	11,700[1]
Special Stipulation - oil and gas	Fed. Min. Acres	-0-	11,700[1]	64,380[2]	64,380[2]
Close to solid leasable minerals	Fed. Min. Acres	-0-	-0-	11,700[1]	64,380[2]
Close to mineral material sales	Fed. Min. Acres	-0-	-0-	11,700[1]	11,700[2]
Limited ORV use-designated routes	Surf. Acres	-0-	8,820	8,820	49,570
Full fire suppression	Surf. Acres	49,570	-0-	-0-	-0-
Limited fire suppression	Surf. Acres	-0-	8,820	49,570	49,570
VRM Class II[4]	Surf. Acres	-0-	-0-	8,820	8,820
VRM Class III	Surf. Acres	49,570[3]	49,570	40,750[5]	40,750[5]
Rights-of-way avoidance area[4]	Surf. Acres	-0-	-0-	-0-	8,820

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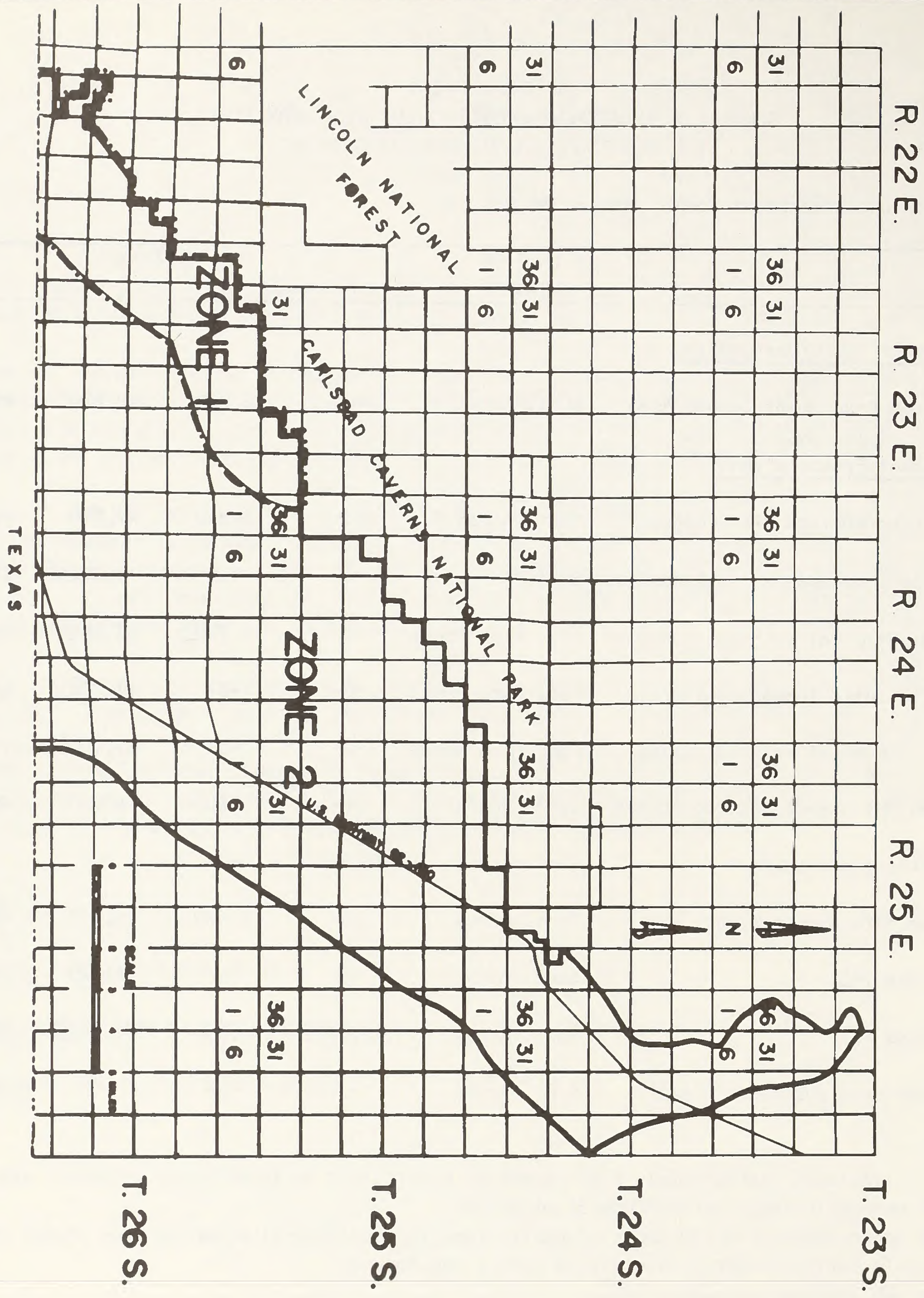
[1] In Zone 1, includes approximately 8,820 acres of public land surface/Federal minerals and 2,880 acres of nonpublic land surface/Federal minerals.

[2] Includes approximately 49,570 acres of public land surface/Federal minerals plus 14,810 acres of nonpublic surface/Federal minerals in Zone 1 and Zone 2.

[3] Based on VRM inventory results, only.

[4] Zone 1, only.

[5] Zone 2, only.



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GUADALUPE ESCARPMENT SCENIC AREA SMA No. 20

SMA BOUNDARY

_ . _ . _ ALTERNATIVE B (ZONE 1)

_____ ALTERNATIVE C, D (ZONE 1 & 2)

APPENDIX E-21

ALKALI LAKE INTENSIVE ORV USE AREA

SMA No. 21

ALTERNATIVE A

Objective: Continue managing area for multiple uses.

Prescription: None. Continue full fire suppression.

Rationale: Any requests for special recreation use permits could still be handled on a case-by-case basis.

ALTERNATIVE B

Objective: To manage 900 acres for Intensive ORV Use in conjunction with other multiple uses.

Prescriptions: Highlight the area for review of oil and gas applications to drill and ensure that all actions within the area consider recreational ORV use needs. Authorize motorcycle events within the area. Continue full fire suppression.

Rationale: No motorcycle events have been authorized within the area; however, it receives very heavy random use and interest has been expressed for events in the area by the local motorcycle club. Working closely with the oil and gas industry can result in continued and expanded ORV use while still providing for minerals and other resource development.

ALTERNATIVES C and D

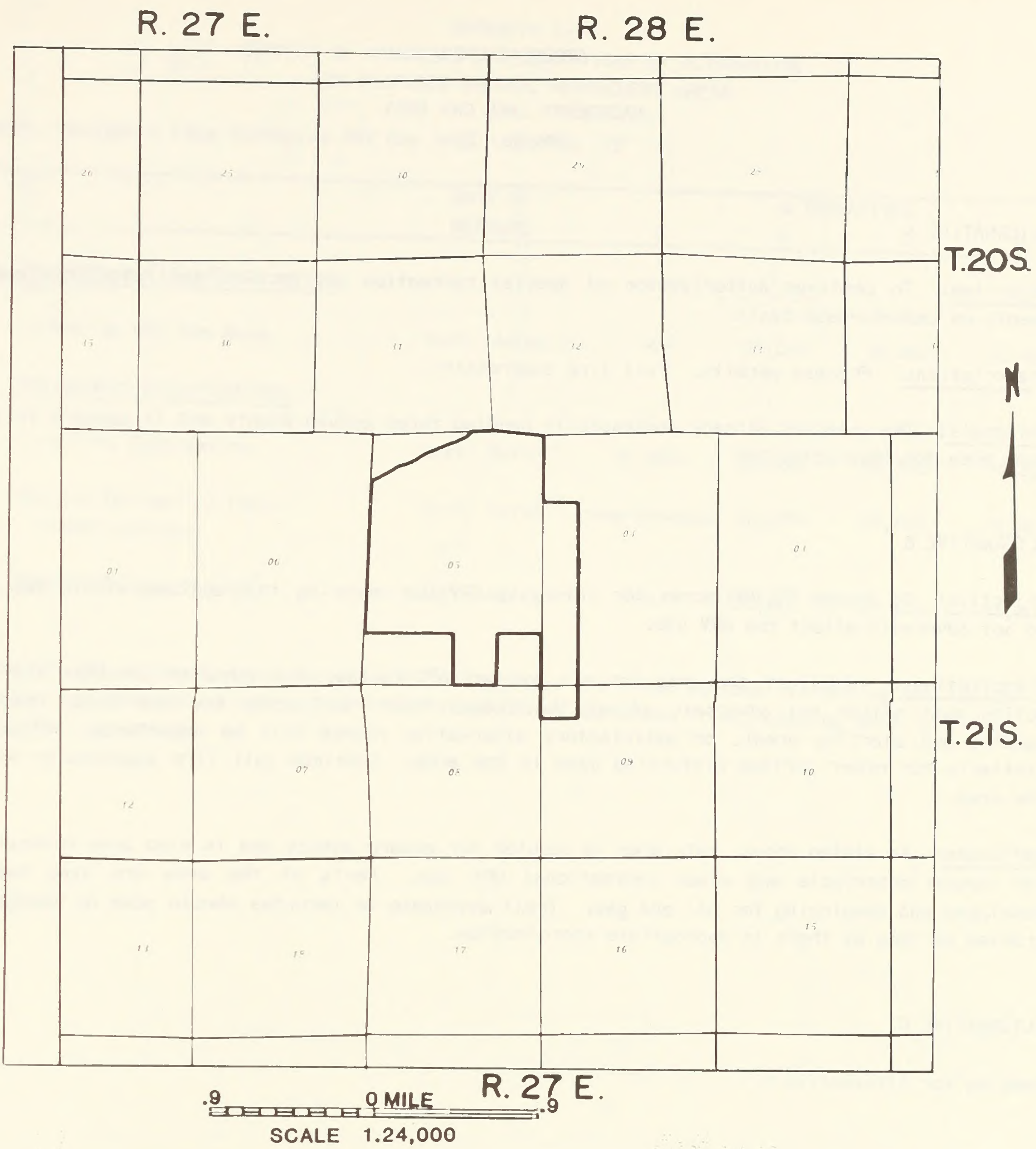
Same as for Alternative B.

APPENDIX E-21
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Alkali Lake Intensive ORV Use Area - SMA No. 21

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Intensive ORV Use Area	Surf. Acres	-0-	900	900	900
II Management Prescriptions					
Full Fire Suppression	Surf. Acres	900	900	900	900
Special Recreation Permit Authorizations	Surf. Acres	case-by-case	900	900	900
Special Stipulations[1/]	Surf. Acres	-0-	900	900	900

[1/] Special Stipulations would apply to all oil and gas and other surface disturbing activities to ensure protection of approved ORV trails and other use areas (i.e., camping area, starting and refueling areas).


R. 27 E.
R. 28 E.
T.20S.
T.21S.
N
R. 27 E.
.9
0 MILE
.9
SCALE 1.24,000

ALKALI LAKE OFF·ROAD VEHICLE AREA SMA No.21

OWNERSHIP STATUS (Shown inside SMA boundary, only)

═ PUBLIC SURFACE AND MINERALS

SMA BOUNDARY

— ALTERNATIVE B, C, D

APPENDIX E-22

HACKBERRY LAKE ORV AREA
SMA No. 22

ALTERNATIVE A

Objective: To continue authorization of special recreation use permits for motorcycle enduro events on case-by-case basis.

Prescriptions: Process permits. Full fire suppression.

Rationale: The area has already successfully handled three enduro events and it appears to be a good area for this activity.

ALTERNATIVE B

Objective: To manage 55,800 acres for Intensive ORV Use ensuring that actions within the area do not adversely affect the ORV use.

Prescriptions: Highlight the area for oil and gas APD review, and stipulate on APDs that any action must either not adversely affect the Enduro trails and other key use areas (such as camping and starting area), or satisfactory alternative routes will be negotiated. Stipulate similarly for other surface disturbing uses in the area. Continue full fire suppression within the area.

Rationale: As stated above, this area is popular for enduro events and is also used extensively for random motorcycle and other recreational ORV use. Parts of the area are also heavily developed and developing for oil and gas. Trail avoidance or reroutes should pose no management problem as long as there is appropriate coordination.

ALTERNATIVE C

Same as for Alternative B.

ALTERNATIVE D

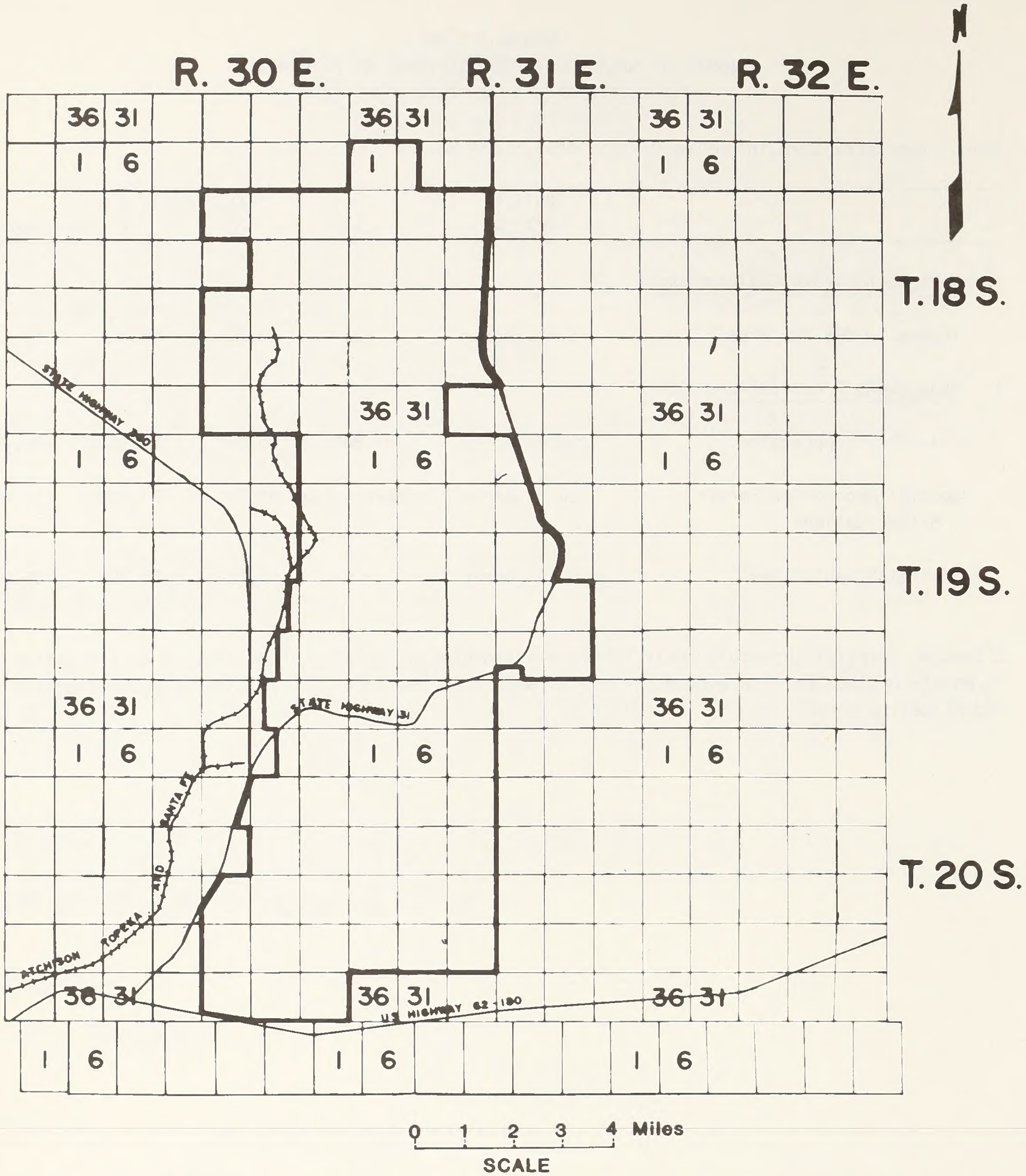
Same as for Alternative B.

APPENDIX E-22
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

Name: Hackberry Lake Intensive ORV Use Area - SMA No. 22

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I Management Title/Designation					
Intensive ORV Use Area	Surf. Acres	-0-	55,800	55,800	55,800
II Management Prescriptions					
Full Fire Suppression	Surf. Acres	55,800	55,800	55,800	55,800
Special Recreation Permit Authorizations	Surf. Acres	case-by-case	55,800	55,800	55,800
Special Stipulations[1/]	Surf. Acres	-0-	55,800	55,800	55,800

[1/] Special Stipulations would apply to all oil and gas and other surface disturbing activities to ensure protection of approved ORV trails and other use areas (i.e., camping area, starting and refueling areas).


N
R. 30 E.
R. 31 E.
R. 32 E.
T. 18 S.
T. 19 S.
T. 20 S.
36 31
1 6
STATE HIGHWAY 360
STATE HIGHWAY 31
US HIGHWAY 62-180
ATCHISON TOPEKA AND SANTA FE
0 1 2 3 4 Miles
SCALE

HACKBERRY LAKE OFF·ROAD VEHICLE AREA SMA No. 22

SMA BOUNDARY

—— ALTERNATIVE B, C, D

APPENDIX E-23
PECOS RIVER CORRIDOR
SMA No. 23

ALTERNATIVE A

Objective: Intensively manage 120 acres adjacent to Red Bluff Reservoir to provide the public scarce water-based recreation opportunities.

Prescription: Develop day and overnight use facilities for water-based recreation pursuits, including camp sites, picnic sites, sanitation facilities, and a boat access ramp. Maintain cooperation with county government, NMDG&F, and special interest groups to enhance intensive recreation management. Manage the Red Bluff Reservoir Site under VRM class II objectives. The existing withdrawal for locatable minerals at Red Bluff Reservoir (1,729 acres) would remain in effect.

Rationale: The Red Bluff Reservoir receives heavy boating, fishing, picnicking, and camping use, with BLM providing important public access to the water. The East Eddy/Lea MFP directed management to develop recreation facilities at the reservoir and manage for intensive recreation use.

ALTERNATIVE B

Objective: Provide some protection for scarce water-based recreation opportunities along the free flowing Pecos River and at Red Bluff Reservoir.

Prescription: Same as Alternative A for 120 acres at Red Bluff Reservoir, except for adding the exclusion of livestock use closing it to solid leasable minerals and applying stipulation to oil and gas leases. Designate a total of 6,000 acres (a half-mile wide corridor) as a Special Recreation Management Area (SRMA). Apply protective restrictions on locatable minerals (1,729 acres) mineral material sales, ORV use, livestock grazing, and fire. Apply VRM Class II and III objectives on public land parcels along the river.

Rationale: Intensive management of public lands along the free flowing Pecos River would help meet high use demands for scarce water-based recreation activities, enhance partial retention of primarily semiprimitive motorized recreation opportunity settings, and support other resource conflicts by reducing some soil erosion and vegetation destruction while still allowing leasable minerals and other resource development to occur in the area.

ALTERNATIVE C

Objective: Provide quality recreational opportunities on public land parcels along the Pecos River while protecting natural values.

Prescriptions: Same as for Alternative B, but with an NSO stipulation applied on oil and gas leases and a closure to solid leasable minerals on the 6,000 acres within the corridor of the Pecos River.

Rationale: Same as for Alternative B, except that additional protection for the natural and recreation values, and emphasis on retention of semiprimitive motorized recreation opportunity settings along the river would increase the quality of the recreation opportunites and enhance natural values.

ALTERNATIVE D

Objective: Maximize protection for water-based recreation opportunities along the Pecos River and at Red Bluff Reservoir while protecting natural values.

Prescriptions: Same as for Alternative C, but with expansion of the intensively managed Red Bluff Reservoir recreation site from 120 acres to 160 acres. Full fire suppression and livestock exclusion would also include the 160 acres.

Rationale: Same as Alternative C, except that expanding the Red Bluff Reservoir recreation site would help meet anticipated long-term recreation demands for developed facilities.

APPENDIX E-23
SUMMARY OF MANAGEMENT PRESCRIPTIONS BY ALTERNATIVE FOR PROPOSED SPECIAL MANAGEMENT AREAS

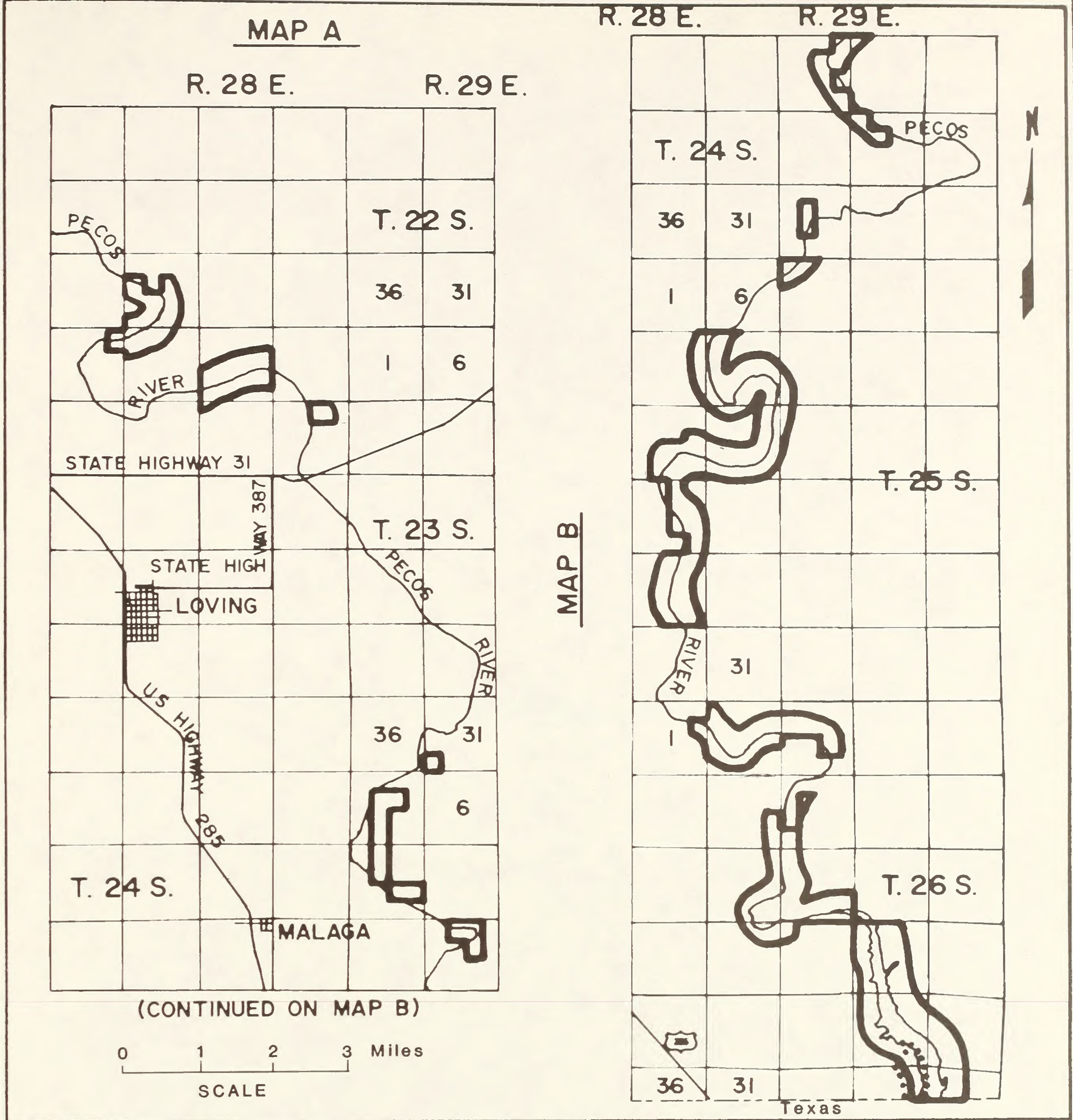
Name: Pecos River Corridor - SMA No. 23

	UNIT OF MEASURE	ALTERNATIVES A	B	C	D
I **Management Title/Designation**					
Special Recreation Management Area	Surf. Acres	-0-	6,000	6,000	6,000
Recreation Site	Surf. Acres	120	-0-	-0-	-0-
II **Management Prescriptions**					
Restricted surface disturbance	Surf. Acres	-0-	6,000	6,000	6,000
No Surface Occupancy-oil and gas[1]	Fed. Min. Acres	-0-	120	6,000	6,000
Close to solid leasable minerals[1]	Fed. Min. Acres	-0-	120	6,000	6,000
Withdrawal of locatable minerals	Fed. Min. Acres	1,729	1,729	1,729	1,729
Close to mineral material sales	Fed. Min. Acres	-0-	6,000	6,000	6,000
Exclude Livestock grazing	Surf. Acres	-0-	120	120	160
Limited ORV use-designated routes	Surf. Acres	-0-	6,000	6,000	6,000
Full fire suppression	Surf. Acres	6,000	120	120	160
Limited fire suppression	Surf. Acres	-0-	5,880	5,880	5,840
VRM Class II	Surf. Acres	120	4,500[2]	4,500[2]	4,500[2]
VRM Class III[3]	Surf. Acres	-0-	1,500	1,500	1,500
VRM Class IV[3]	Surf. Acres	1,500	-0-	-0-	-0-

[1] Acreage excludes the acres of Federal Mineral Estate below the Pecos River and Red Bluff Reservoir.

[2] Acreage includes public land from Red Bluff Reservoir to Malaga Bend.

[3] Acreage includes public land from Malaga Bend to Herradura Bend.


MAP A
R. 28 E.
R. 29 E.
PECOS
RIVER
T. 22 S.
36
31
1
6
STATE HIGHWAY 31
STATE HIGHWAY 387
T. 23 S.
PECOS
RIVER
LOVING
US HIGHWAY 285
36
31
6
T. 24 S.
MALAGA
(CONTINUED ON MAP B)
0
1
2
3
Miles
SCALE
MAP B
R. 28 E.
R. 29 E.
PECOS
T. 24 S.
36
31
1
6
T. 25 S.
RIVER
31
1
T. 26 S.
36
31
Texas
N

PECOS RIVER CORRIDOR SMA No. 23

SMA BOUNARY

...... ALTERNATIVE A

—— ALTERNATIVE B, C, D

APPENDIX

F

APPENDIX F-1

ACCESS ANALYSIS METHODOLOGY

A. INTRODUCTION

The access issue evaluation procedure that was developed specifically for the Carlsbad RMP varied from procedures used for similar issues in other BLM land-use planning efforts. The general access evaluation approach used in other plans has been to rely on transportation planning procedures to determine the legal accessibility and physical condition of roads. Problems with relying on transportation planning (which should be considered as only one of several methods available for implementing access objectives) occur because an on-the-ground road inventory is needed, user and resource management needs are not adequately considered, alternative access methods are not considered and decisions have been difficult to implement since they involve massive road construction or easement acquisition programs that are beyond BLM capabilities to accomplish. The intent of the RMP access evaluation procedure was to simplify inventory tasks, accurately identify problems considering both motorized/non-motorized access needs, and establish achievable objectives whereby problems would be resolved according to their relative importance. Access solutions which will be determined in the implementation phase will be in accordance with objectives developed using procedures described in this appendix

Appendix F-2 describes road policy, engineering standards and implementation procedures that are proposed for the CRA.

B. PROCEDURES

1. Inventory

Inventory consisted of the collection of existing information concerning location of public road systems, other transportation routes and land ownership. Information sources that were used included county road maps, 1:100,000 scale land status maps and USGS 7 1/2 and 15 minute series topographic maps.

Areas of public land where access needs were to be evaluated were delineated on a 1:100,000 scale land status base map using the following features to establish external boundaries; encircling public roads, the New Mexico - Texas State line, boundaries and common boundaries with National Parks and National Forests. The areas delineated using the above boundary-setting features are known as access tracts (AT). Within AT boundaries, all penetrating legal access roads public roads, BLM roads and other roads that don't have ownership blockages were marked.

ATs, as delineated, graphically portray the maximum available legal access for both motorized and nonmotorized activities. This graphic information reduced the complexity of performing evaluations to determine whether access to public lands needed improvement or was adequate to accommodate existing and potential uses.

2. Analysis

Evaluation of access needs in each AT was performed by an interdisciplinary team of CRA personnel. Resource management disciplines represented on the team were surface protection, range, wildlife and recreation management. Information concerning access or resource protection needs for other resource management programs, such as mineral development and cultural values, were also provided by the team members.

The following rating factors, in addition to legal access routes shown on the inventory map, were considered by team members when evaluating access needs for ATs:

(1) Configuration (AT size, shape and amount of public land)
(2) Resource values (quantity and quality)
(3) Public demand and BLM administrative needs
(4) Proximity to population centers
(5) Proximity to major travel routes
(6) Potential for access closures
(7) Potential for public land disposal
(8) Resource conflicts (caused by accessibility)

An evaluation criteria that was used when determining adequacy for nonmotorized uses was that public lands located within two miles walking distance from usable roads did not require additional access. However additional roads could be developed to accommodate motorized uses on these accessible public lands.

C. RESULTS

A total of 128 ATs were identified in the inventory phase. During the initial interdisciplinary team evaluation, additional access was identified as a high priority need in 10 tracts, moderate in 13 and low priority in 9 tracts. Access related conflicts were noted in 25 areas and 78 tracts were proposed as no action areas due to sufficient accessibility and lack of resource conflicts.

During later stages of the planning effort, some modifications were made which affected access tract boundaries, priority rankings and the number of areas with access conflicts. Two tracts were consolidated with other areas due to corrected road information which resulted in a revised total of 126 ATs. Based on new information regarding resource uses in ATs, priority rankings for access improvement were changed to 6 high, 11 moderate and 8 low priority areas. The number of ATs where access conflicts were identified was changed to 23 areas. Eighty-five ATs were proposed as no action areas.

Modifications described in the preceding paragraph were used as the basis for Alternative C in the Carlsbad RMP. Separate access proposals for Alternatives A, B and D were developed in accordance with the resource allocations and emphasis of those alternatives.

TABLE F-1
COMPARISON OF ACCESS ACTIONS BY ALTERNATIVE[1/]

Map Reference Number	Access Tract Number	Alternative A	B	C	D and DI
1	141935	NC	NC	H	NC
2	151723	NC	NC	L	NC
3	161905	NC	NC	H	NC
4	162124	NC	NC	M	NC
5	171930	NC	NC	H	NC
6	172035	NC	NC	L	NC
7	181626	NC	NC	M/R	R
8	182119	NC	NC	L	NC
9	182415	NC	NC	M	NC
10	191801	NC	NC	H	NC
11	201707	NC	NC	M	NC
12	202336	NC	NC	M	NC
13	212119	NC	NC	H/R	H/R
14	212401	R	R	M/R	R
15	222617	NC	R	R	R
16	232506	NC	R	M/R	H/R
17	242401	NC	R	M/R	H/R
18	242635	NC	R	R	R
19	252423	NC	NC	NC	R
20	252435	NC	NC	NC	R
21	252501	NC	NC	NC	R
22	252526	NC	R	R	R
23	252627	NC	R	R	R
24	252704	NC	NC	NC	R
25	262317	NC	R	M/R	H/R
26	262416	NC	R	R	R
27	262615	NC	R	L/R	R
28	162821	NC	R	L	NC
29	163123	NC	R	R	R
30	172926A	NC	R	R	R
31	192912	NC	NC	L	NC
32	193309	R	R	R	R
33	212814	NC	NC	L	NC
34	213025	R	R	M/R	R
35	222814	NC	NC	L	NC
36	222832	NC	R	R	R
37	223019	NC	NC	NC	R
38	223311A	NC	NC	NC	R
39	233030	NC	NC	NC	R
40	233115	NC	NC	NC	R
41	242907	NC	R	R	R
42	243109	NC	NC	NC	R
43	243502	NC	NC	R	R
44	252919	R	R	R	R
45	253124	NC	NC	M/R	R
46	253428	NC	H	H	NC
47	262919	NC	R	R	R

TABLE F-1
COMPARISON OF ACCESS ACTIONS BY ALTERNATIVE[1/]

[1/] Only 47 of the total 126 access tracts in the CRA that are subject to an action under any or all alternatives are portrayed on this table and Map 2-2. The other (79) tracts are not affected by a proposed action in any alternative.

[2/] (a) Tracts identified with the letters "NC" indicate that no change from the existing situation is proposed.

(b) Tracts where additional access would be obtained are indicated, by priority, as:
H = high
M = moderate
L = low

(c) Tracts where access restrictions are proposed are indicated with the letter "R". Priorities for implementing restrictions correspond with implementation priorities for SMAs. Restrictions, in most cases, apply to a portion of the lands or travel routes within various tracts.

APPENDIX F-2

ROAD POLICY, STANDARDS AND IMPLEMENTATION PROCEDURES

A. INTRODUCTION

This appendix was prepared to describe, in general terms, the policy for future actions in the CRA that involve road construction, maintenance, rehabilitation and/or abandonment. Final policy will be developed based upon review and approval of this appendix.

There are thousands of miles of roads located on public lands within the CRA that are subject to BLM jurisdiction. As a general rule, these road systems are adequately designed and maintained to serve their intended purpose. However, there are many roads which have been improperly constructed and maintained that contribute to erosion. Also, in oil development areas there is a proliferation of roads, within many routes providing access to the same area of land. Usually, these roads were constructed for exploratory purposes and were not obliterated when they were no longer needed.

B. ROAD STANDARDS AND IMPLEMENTATION PROCEDURES

Road standards and implementation procedures described in this section will be in accordance with engineering standards further described in Section C of this appendix.

Although most recent road construction and/or improvement activity in the CRA relates to mineral development, these road standards were developed to apply to all resource development, management, and protection related activities.

Implementation of road standards will involve the following steps for existing roads:

1.) Inventory;
2.) Functional classification of existing roads that would comprise a logical transportation network for public land management;
3.) Contact with resource users to determine which roads are needed;
4.) Assign road maintenance or rehabilitation responsibility to BLM or other parties, where appropriate;
5.) Abandon and reclaim unneeded roads:

All new roads constructed in the CRA will be formally authorized, constructed and maintained in accordance with road standards described in this draft policy.

The following extract from BLM Manual 9113 explains the purpose of functional classification of road systems, which will be implemented by BLM in the CRA:

FUNCTIONAL CLASSIFICATION. The method and terminology recommended by the National Highway Functional Classification Study of 1968 provides guidelines for classifying Bureau roads. The Bureau has added resource roads as a category in addition to those identified in the 1968 study (as recommended by an interagency task group study on low-volume road standards, 1976-77). As Bureau roads are predominately low volume and are generally extensions of, or connectors to State or county systems, an "arterial" category does not apply to Bureau roads. Classify Bureau roads is as follows:

1. Collector Roads. These Bureau roads normally provide primary access to large blocks of land, and connect with or are extensions of a public road system. Collector roads accommodate mixed traffic and serve many uses. They generally receive the highest volume of traffic of all the roads in the Bureau road system. User cost, safety, comfort, and travel time are primary road management considerations. Collector roads usually require application of the highest standards used by the Bureau. As a result, they have the potential for creating substantial environmental impacts and often require complex mitigation procedures.

2. Local Roads. These Bureau roads normally serve a smaller area than collectors, and connect to collectors or public road systems. Local roads receive lower volumes, carry fewer traffic types, and generally serve fewer uses. User cost, comfort, and travel time are secondary to construction and maintenance cost considerations. Low volume local roads in mountainous terrian, where operating speed is reduced by effort of terrain, may be single lane roads with turnouts. Environmental impacts are reduced as steeper grades, sharper curves, and lower design speed that would be permissible on collector roads are allowable.

3. Resource Roads. These Bureau roads normally are spur roads that provide point access and connect to local or collector roads. They carry very low volume and accommodate only one or two types of use. Use restrictions are applied to prevent conflicts between users needing the road and users attracted to the road. The location and design of these roads are governed by environmental compatibility and minimizing Bureau costs, with minimal consideration for user cost, comfort, or travel time.

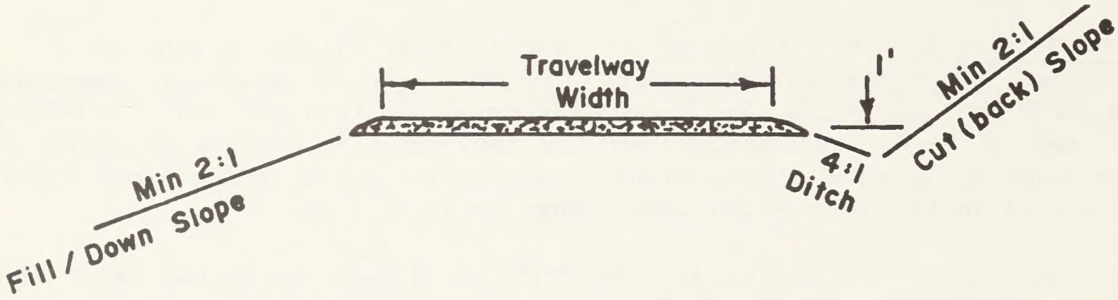
BLM road policy as stated in BLM Manual 9113 states that road standards may be modified to meet local situations. The major modifications which have been incorporated in these local standards are: (1) design by a professional engineer will only be required for high standards (collector) roads or construction in mountainous or steep terrain; (2) establishment of local policies regarding temporary and primitive subclass roads within the "resource" functional classification, and (3) the Area Manager may authorize vehicles to drive across country without blading or use primitive roads in dry weather. In some cases there may be minor blading or brush required with the blade three to four inches above natural ground line. This is a temporary type road with intermittent or one-time access. If it is closed after use, water bars should be constructed. Primitive roads are existing two-track roads that are created by vehicle traffic; there are not any engineering standards. Spot erosion control may be done to halt erosion.

C. ROAD STANDARDS

The minimum standard (See Table F-2) for the Roswell District a 14-foot travelway width for single-lane roads and a 24-foot travelway width for double-lane roads. Single land roads require turnouts. The maximum allowable grade is 8 percent. Steeper grades must have a complete engineering analysis. Numbers of vehicles and/or vehicle types may be used to determine design standards (See Figure 1).

Table F-2
Minimum Road Design Standards - Resource Class Road [1]

Single Lane	Double Lane	
Width - Travel way width	14' (with turnouts)	24
Average Design Speed	15-25 m.p.h.	25-35 m.p.h.
Maximum Grade	10% *	10% *
Vertical Curve (Max)	see note No. 1	see note No. 1
Minimum Horizontal Curve Radius (feet)	65' for 15 m.p.h. 100' for 25 m.p.h.	100' for 25 m.p.h. 100' with curve widening for 35 m.p.h. (See Figure 1)
Cut Slope (back slope)		
Normal, minimum	2:1	2:1
Fill (down) Slope		
Normal, minimum	2:1	2:1
Ditch (one foot deep)		
Normal, minimum	4:1	4:1



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*Any grade above 10 percent requires a complete engineering analysis and Area Manager approval except for "pitch grades" (i.e., 8-10 percent grades that are 300 feet or less in length, followed by much flatter grades).

Note 1 - Vertical curve design is not required unless the road by its location or length will probably develop into a "Local" class. This determination and requirement is determined by the Area Manager.

Note 2: For local and collector orads see BLM Manual 9113

1/ See Figure 1, Typical Road Section

TURNOUTS

Turnouts are required on all roads with a travel surface less than 20 feet wide. Turnouts must be located at 1,000 foot intervals or be intervisible; whichever is less. Locate on right side of "Empty direction" if it is a haul road.

Turnouts must be provided on all one-lane roads which carry two-way traffic. Traffic safety requires that these turnouts be visible between each other and located on all blind horizontal and vertical curves and supplemented as necessary so that the maximum distance between turnouts is no more than 1,000 feet. For more heavily used or higher speed roads, the 12 foot temporary roads the maximum distance between turnouts is reduced to a maximum of 500 feet.

Turnouts must be a minimum of 10 feet wide for a length of 100 feet with a 25-foot taper on each end. There is more advantage in an increased number of turnouts than in making them excessively long. This applies unless overwidth and extra length vehicles are to be provided for, in which case the width and length is adjusted accordingly. The full width portion of turnouts is of sufficient length to accommodate at least one unit of the longest vehicle likely to use the road.

DRAINAGE

Drainage control shall be ensured over the entire road through the use of drainage dips, outsloping, insloping, natural rolling topography, ditch turnouts, or culverts (See Figures 3 and 4). Spacing of dips, waterbars, and turnout ditches will vary from 50 feet to 200 feet depending on class, cross slope, road grade and soil type.

Drainage Dip (waterbar) Construction: Drainage dips should be an integral part of almost all resource and short-term roads. They are, in most cases, the least expensive and most effective method of road drainage. Drainage dips can be constructed for any road cross-section (i.e. insloped, outsloped, crowned, etc.). Drainage and road location are the most important aspects of any road (See Figure 5).

CULVERTS

Culvert pipes should be used for cross drains on grades in excess of ten percent gradient. Roadbed culverts would be used to drain inside road ditches when drainage dips are not feasible.

All culvery sizing must be in accordance with accepted engineering practices (i.e. Talbot chart, etc.). The minimum size culverts in any installation must be 18 inches. Drainage crossing culverts should be designed for 10-year frequency or greater storm. Figures 6 and 7 illustrate proper culvert installation.

Fisheries requirements will necessitate a more detailed design as specified by the surface management agency.

ROAD SURFACE STANDARDS

Travel Way

1) Surfacing with caliche and/or gravel would be required where all weather access is needed, if the natural soil does not have the bearing capacity for heavy vehicles in both wet and dry weather.

2) The roadbed should be smooth, free of ruts, chuckholds, rocks, slides, washboards, crowned and/or sloped for drainage.

3) The roadbed should be free from excessive accumulation of dust pockets or layers which are a driving hazard or public nuisance.

4) Berms must be absent along the shoulder.

5) Soft spots, such as those resulting from uncompacted earth, springs, and seeps, must be absent.

CATTLEGUARDS (See Figure 8)

1) All cattleguard grid designs and foundation designs shall meet AASTHO Load Rating H-20, although AASTHO U-80 is preferred where over-weight loads are anticipated.

2) All cattleguard grid width shall meet or exceed the travel bat not less than 14 feet.

3) The approach ramp shall be not less than 50 feet on each side with smooth transition.

4) Provide a wire gate (16 foot minimum) on one side of the cattleguard.

ROAD ALIGNMENT

The location which results in the least soil disturbance, with the lightest cuts and fills, is the best location from the standpoint of erosion control as well as grading costs.

A ridge crest route offers the advantages of light excavation, good drainage, and few culverts. The profile and alignment along ridge tops usually cause adverse grades, and the possibility of making them momentum grades is lessened.

Drainage bottoms usually have favorable grades, but they have several disadvantages. Quite often the bottoms are narrow and require extensive sidehill cuts; the side drainages are larger requiring larger culverts and greater fills, and the possibility of erosion is increased.

Alignment on the hillsides usually follows the grade on the contours around ridges and draws. This makes the road longer. Excavations are heavier as the side hill gets steeper and the higher cut banks expose more soil to erosion. Drainages on sidehill alignment can usually be crossed with fills and culverts.

ROAD GRADES

Grades should not exceed those shown in Table I unless a complete engineering analysis is made of the primary and alternate routes. Steeper grades may be allowed for short distances with approval of the District Manager. Pitched grades, defined as comparatively short sections of unusally steep grades, are introduced for economic reasons. When used, they are compensated by flatter and more suitable grades in other sections. Although normally pitched grades are not desirable, they are acceptable and are recognized as good enginering when economically justified and properly designed. Bear in mind that the erosive effect of water increases with the increase in gradient.

ACCESS ROADS

The following information and sample drawings (Figure 9) illustrate a hypothetical access road built in steep, rough, or unstable terrain or special environmental problem/concerns.
Engineering design, slope staking and carefully controlled construction are all necessary in this case. Under less severe conditions, some requirements may not be necessary Operators and consultants should contact the Chief, Branch of Surface Protection in the appropriate BLM District Office for guidance relating to specific cases.

1.) Planned Access Roads

In general, preliminary engineering plans (of the type shown in Figure 9) might be required for access roads proposed under the following conditions:

- Where the pare (more than 20%) of a majority of the roads profile and alignment consists of:
- Profile grade greater than 10%
- Side (cross) slopes greater than 25%
- Cuts or fills over 10 feet in height
- Terrain showing evidence of past landslides, sloughing, or severe erosion activity

2.) Other requirements might be:

a. Road design or under the direction of a registere professional Engineer. Most roads in this type of terrain would become permanent which requires design by a registered Professional Engineer (See Bureau Manual 9113.42).

b. Slope staking of road before ADP approval as required by Oil & Gas order No. 1.

Figure 1

CURVE WIDENING CHART

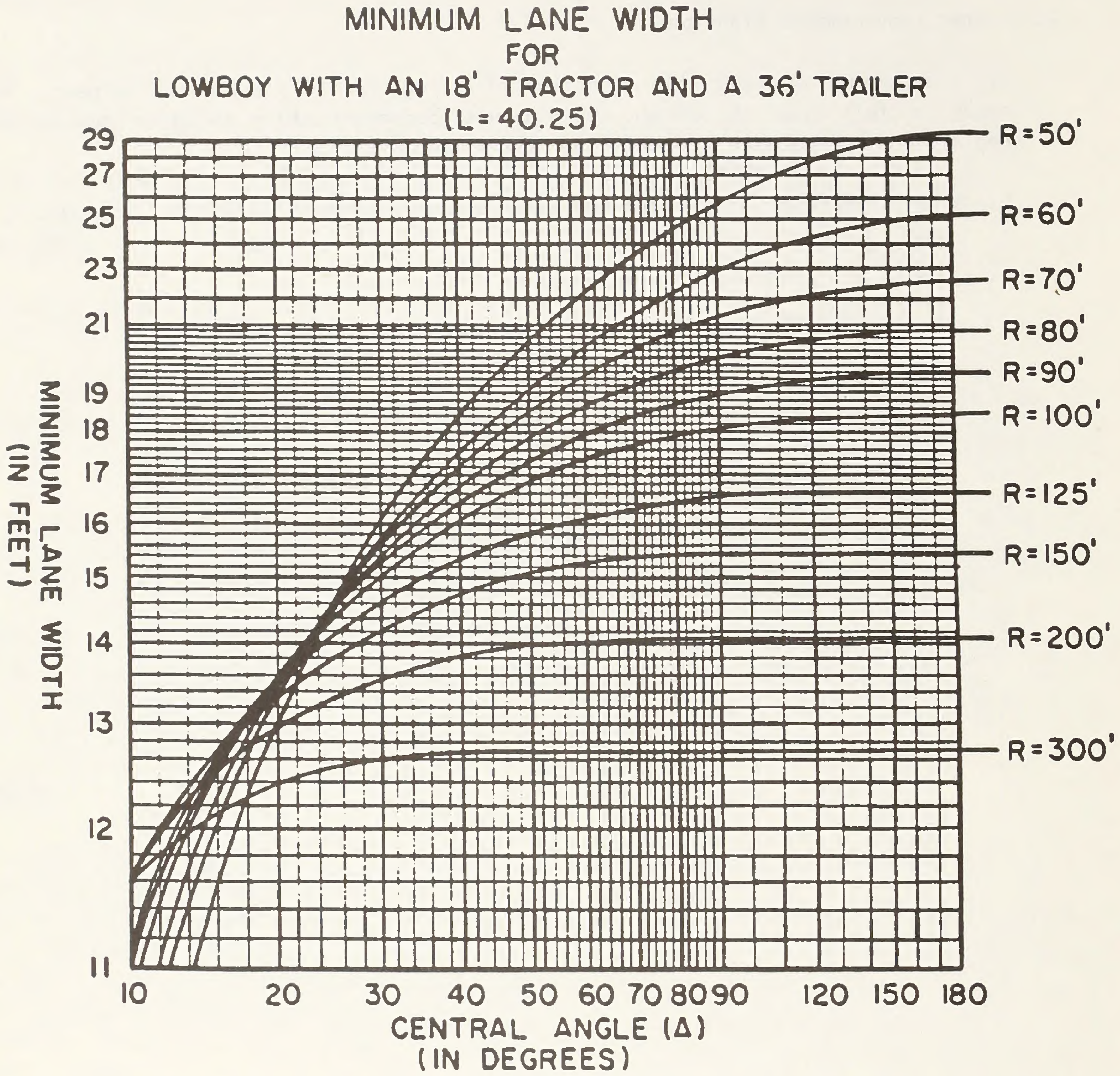
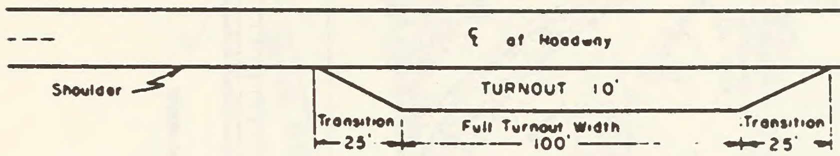


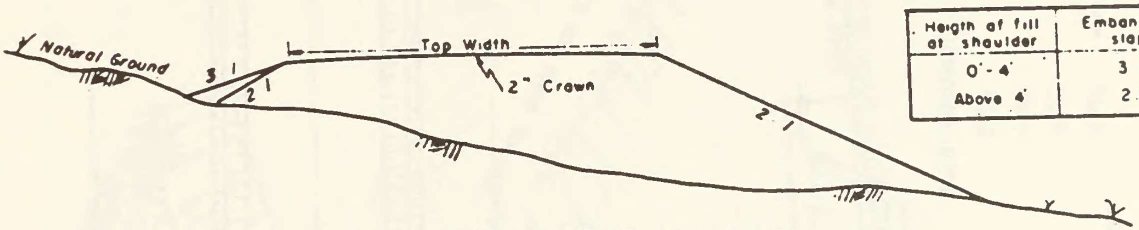
Figure 2


℄ of Roadway
Shoulder
TURNOUT 10'
Transition
25'
Full Turnout Width
100'
Transition
25'

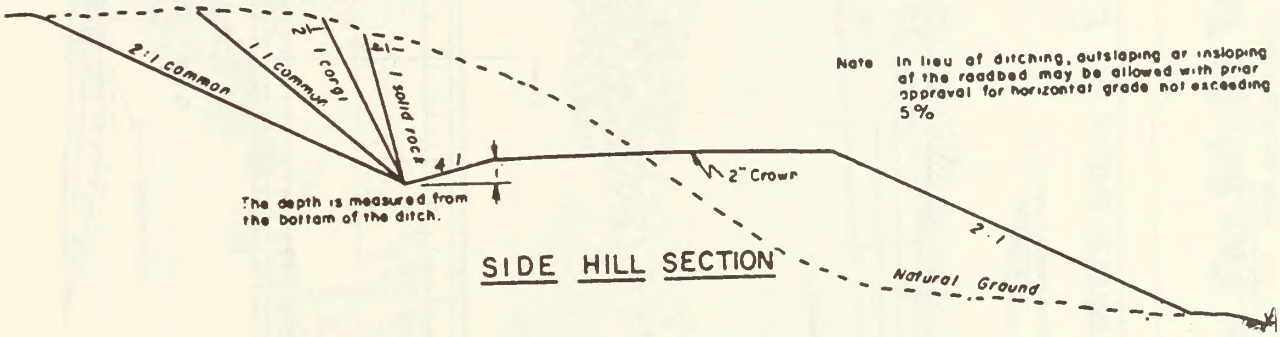
Turnouts shall be constructed on all single lane roads, on all blind curves with additional turnouts as needed to keep spacing below 1000 feet.

PLAN
TYPICAL TURNOUT

Heigth of fill at shoulder	Embankment slope
0'-4'	3:1
Above 4'	2:1

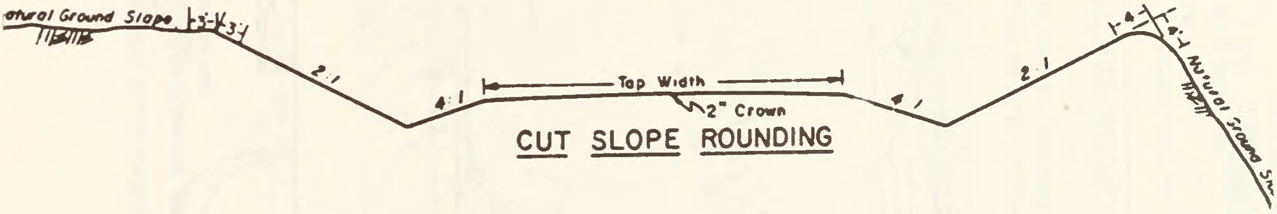

Natural Ground
3:1
2:1
Top Width
2" Crown
2:1

EMBANKMENT SECTION

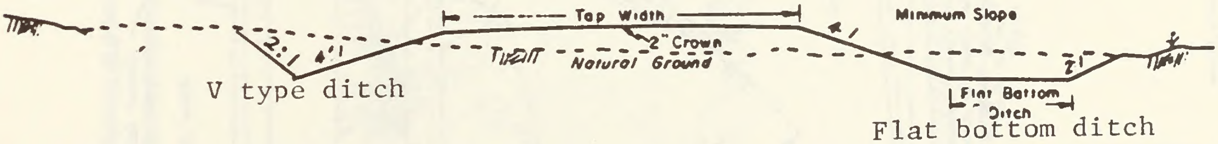

2:1 common
1:1 common
2:1 cong!
4:1
1:1 solid rock
4:1
2" Crown
2:1
Natural Ground
The depth is measured from the bottom of the ditch.

Note In lieu of ditching, outsloping or insloping of the roadbed may be allowed with prior approval for horizontal grade not exceeding 5%

SIDE HILL SECTION


Natural Ground Slope
3:1
3:1
2:1
4:1
Top Width
2" Crown
4:1
2:1
4:1
4:1
Natural Ground Slope

CUT SLOPE ROUNDING


2:1
4:1
V type ditch
Top Width
2" Crown
Natural Ground
4:1
Minimum Slope
2:1
Flat Bottom Ditch
Flat bottom ditch

Note: Material removed from ditches may be spread over the roadway to rai: road elevation if material is suitable.

TYPICAL ROAD SECTION

Figure 3

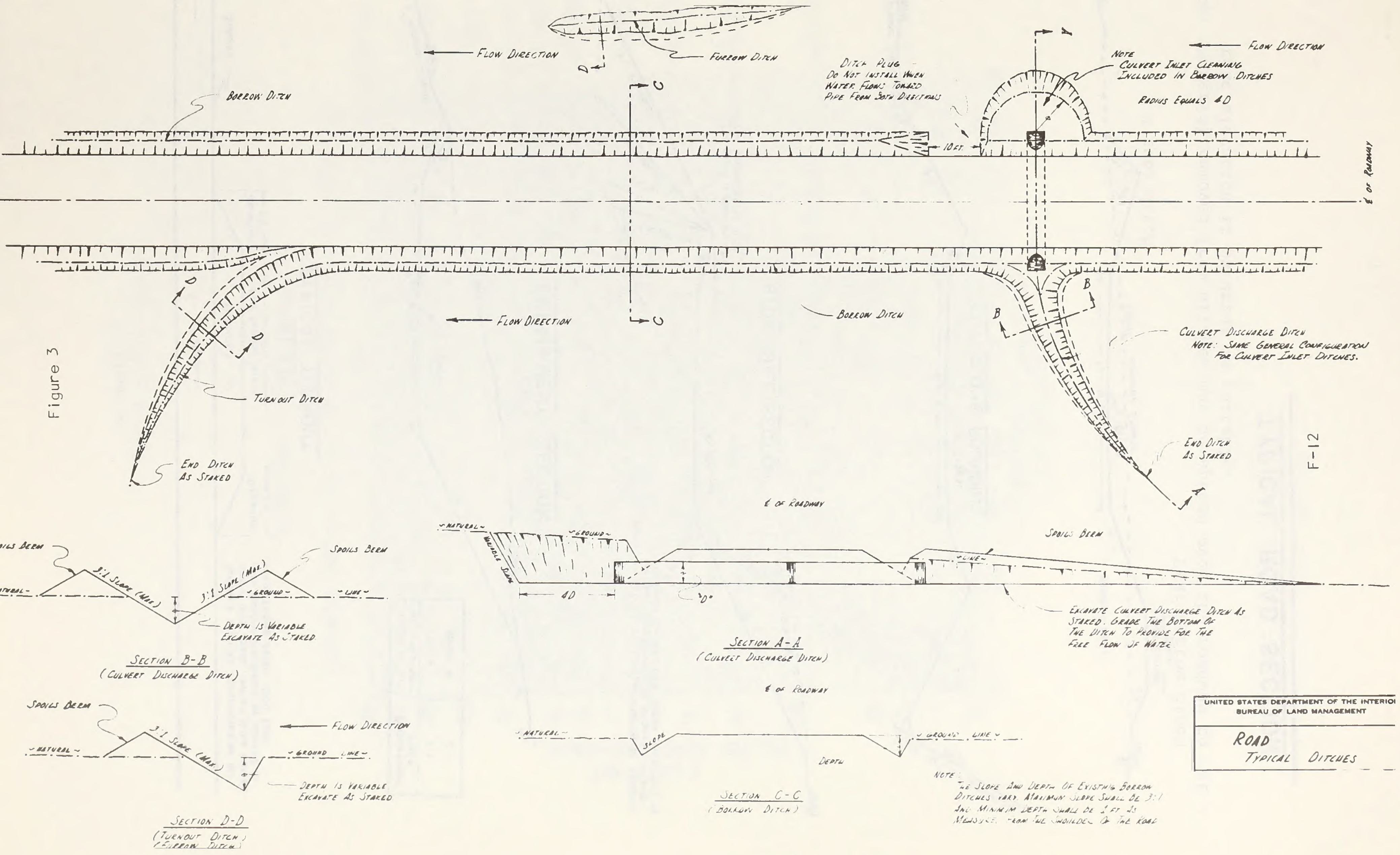
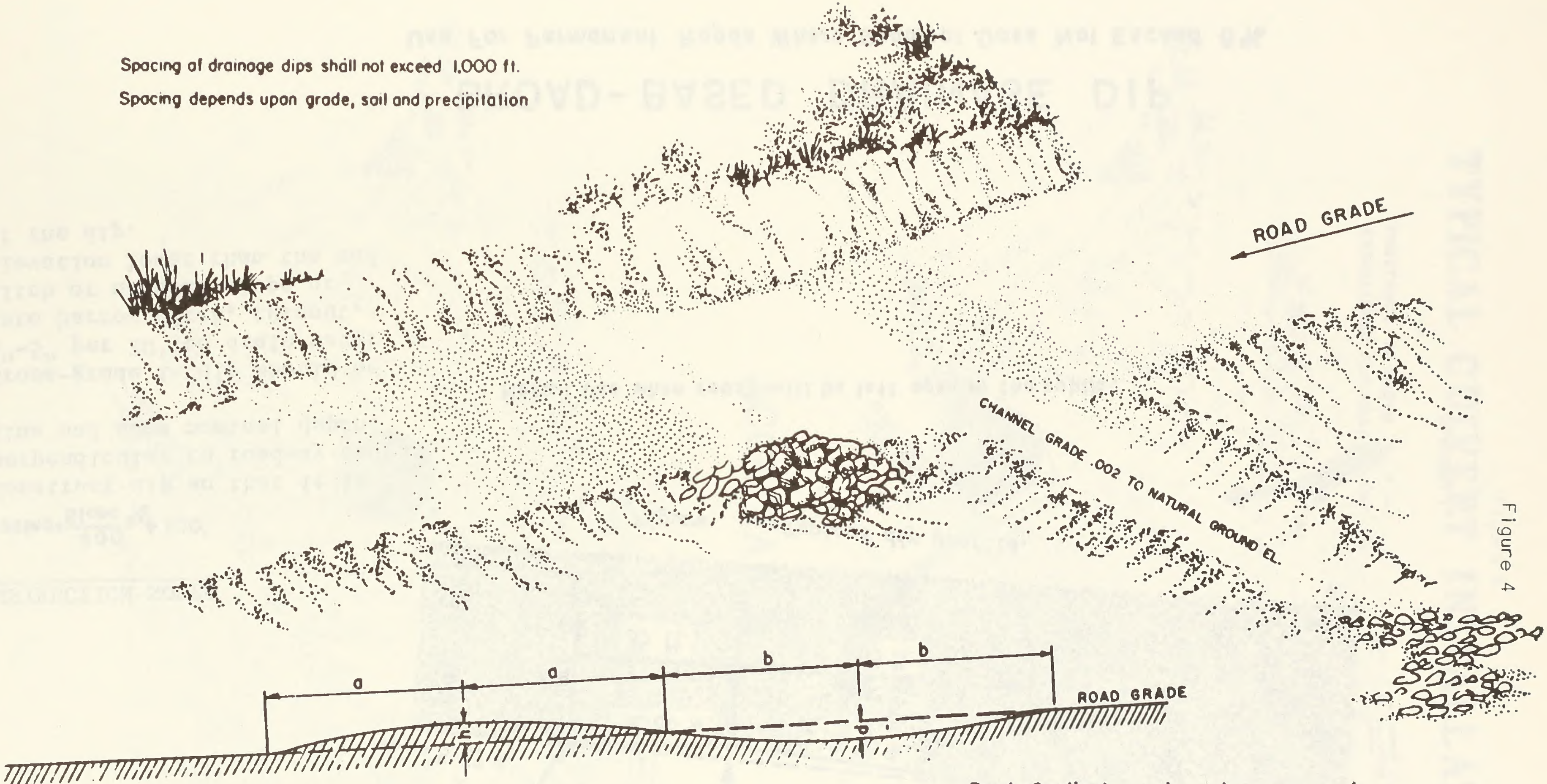

Flow Direction
Furrow Ditch
D
C
Borrow Ditch
Ditch Plug - Do Not Install When Water Flows Toward Pipe From Both Directions
10 FT.
A
Note
Culvert Inlet Cleaning Included In Barrow Ditches
Radius Equals 4D
Flow Direction
℄ of Roadway
D
D
Flow Direction
C
Borrow Ditch
B
B
Culvert Discharge Ditch
Note: Same General Configuration For Culvert Inlet Ditches.
Turnout Ditch
End Ditch As Staked
End Ditch As Staked
A
℄ of Roadway
Spoils Berm
Spoils Berm
3:1 Slope (Max.)
3:1 Slope (Max.)
Natural
Ground
Line
Depth Is Variable Excavate As Staked
Section B-B
(Culvert Discharge Ditch)
Natural
Variable Slope
Ground
4D
"D"
Line
Spoils Berm
Excavate Culvert Discharge Ditch As Staked. Grade The Bottom Of The Ditch To Provide For The Free Flow Of Water
Section A-A
(Culvert Discharge Ditch)
℄ of Roadway
Spoils Berm
3:1 Slope (Max.)
Flow Direction
Natural
Ground Line
Depth Is Variable Excavate As Staked
Section D-D
(Turnout Ditch)
(Furrow Ditch)
Natural
Slope
Ground Line
Depth
Section C-C
(Borrow Ditch)
Note:
The Slope And Depth Of Existing Borrow Ditches Vary. Maximum Slope Shall Be 3:1 And Minimum Depth Shall Be 2 Ft. As Measured From The Shoulder Of The Road
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Road
Typical Ditches

Figure 4

Spacing of drainage dips shall not exceed 1,000 ft.

Spacing depends upon grade, soil and precipitation


ROAD GRADE
CHANNEL GRADE .002 TO NATURAL GROUND EL.
a
a
b
b
ROAD GRADE
h
d

NOTE: All waterbreak material shall be taken from the waterbreak dip or from the ditch line. H - min. of .5 ft.

CROSS SECTION OF WATER-BREAK ON ℄

Road Gradient	d	h	a	b
2 %	0.6'	0.4'	10'	10'
4 %	1.0'	0.8'	14'	14'
6 %	1.2'	1.4'	16'	18'
8 %	2.0'	22'	22'	24'

Thank "U" Mam For Slight To Moderate Slopes

FOR ACCESS ROADS

Figure 5

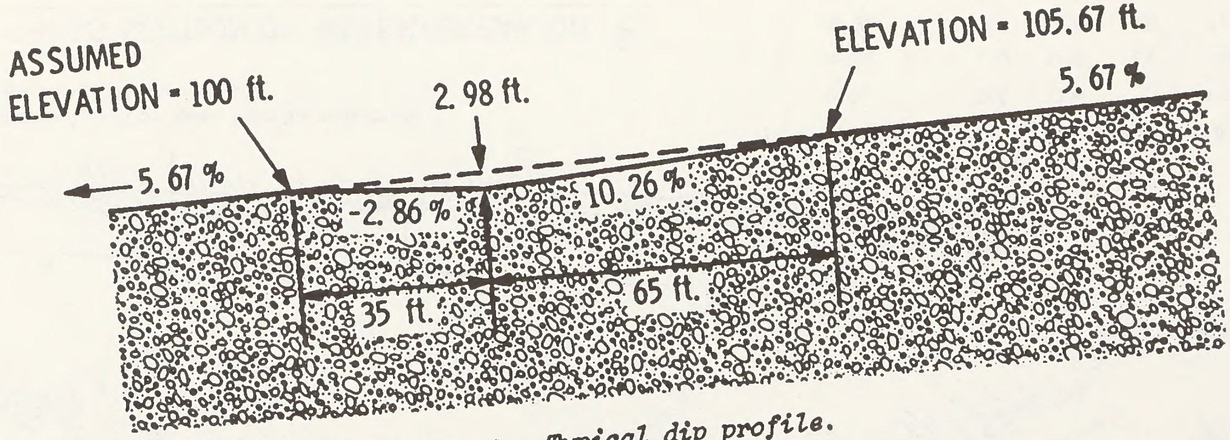

ASSUMED ELEVATION = 100 ft.
5.67 %
2.98 ft.
-2.86 %
10.26 %
35 ft.
65 ft.
ELEVATION = 105.67 ft.
5.67 %

Figure .--Typical dip profile.

Note : Use when roads will be left open to the public.

CONSTRUCTION NOTES

1. Spacing = $\frac{400}{\text{Slope }\%} + 100'$
2. Construct dip so that it is perpendicular to roadway centerline and some nominal depth.

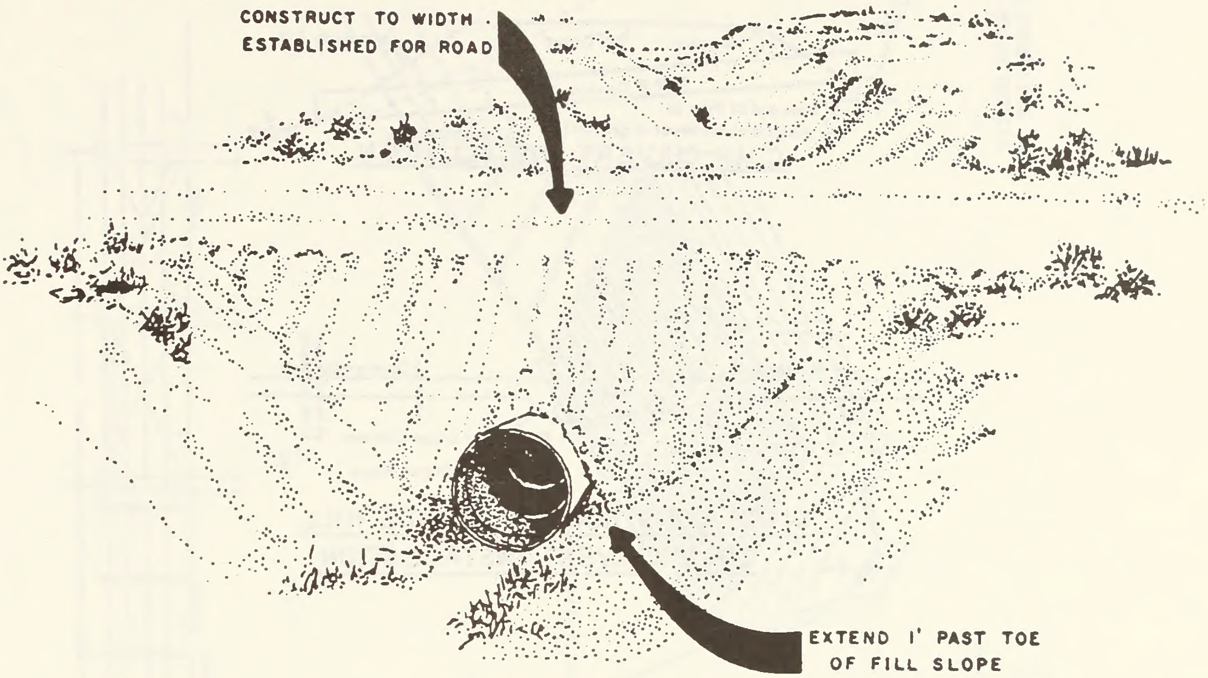
3. Cross-grade in dip should be 3"-5" per 20' to drain water into barrow ditch, turnout, ditch or natural slope or elevation lower than the end of the dip.

BROAD-BASED DRAINAGE DIP

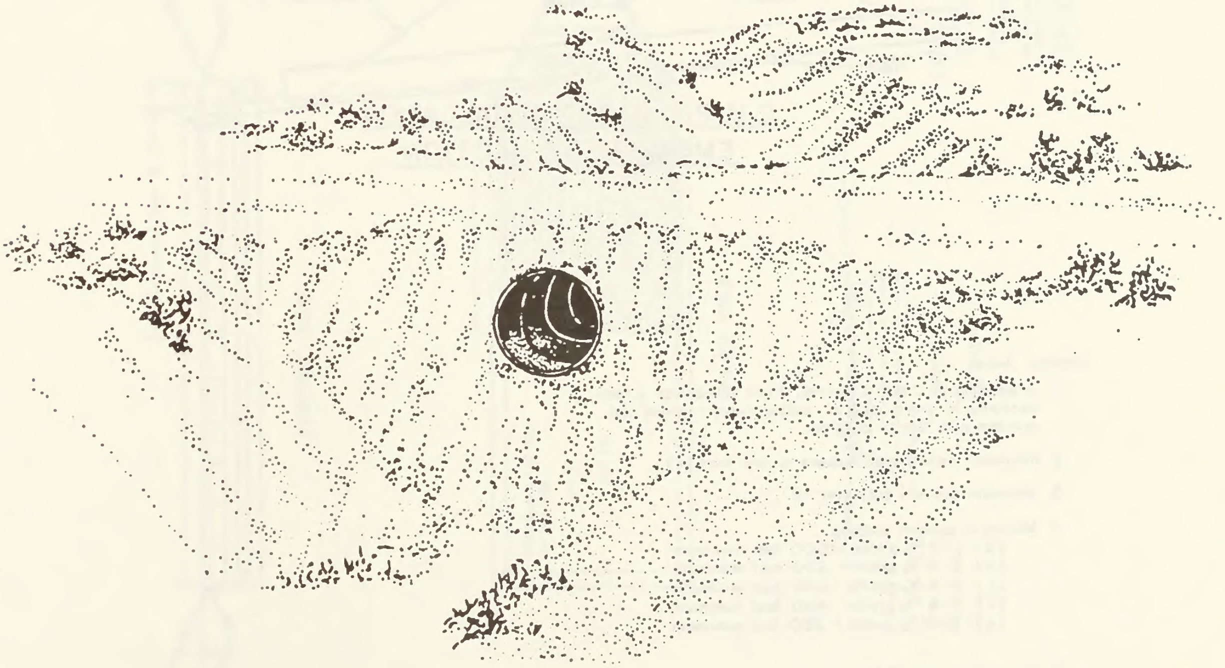
Use For Permanent Roads Where Gradient Does Not Exceed 6%

Figure 6

TYPICAL CULVERT INSTALLATION

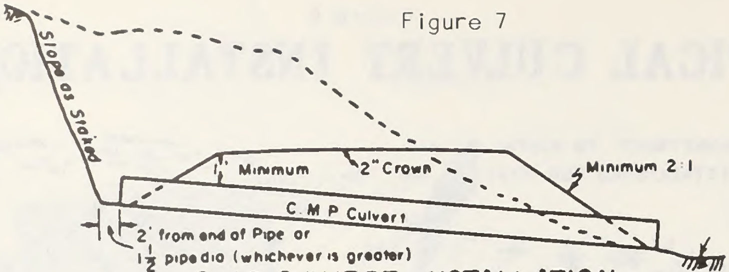

CONSTRUCT TO WIDTH
ESTABLISHED FOR ROAD
EXTEND 1' PAST TOE
OF FILL SLOPE

ACCEPTABLE

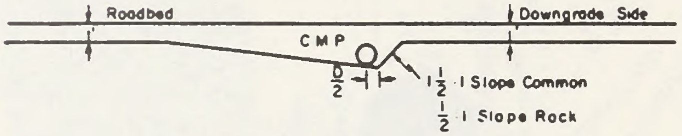


NOT ACCEPTABLE

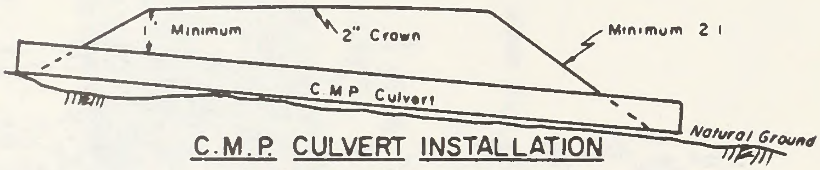
Figure 7


Slope as Staked
1' Minimum
2" Crown
Minimum 2:1
C.M.P. Culvert
2' from end of Pipe or 1½ pipe dia (whichever is greater)

C.M.P. CULVERT INSTALLATION


Roadbed
Downgrade Side
CMP
D/2
1½ : 1 Slope Common
½ : 1 Slope Rock

DITCH CONSTRUCTION AT SIDE HILL
C.M.P. CULVERT INSTALLATION

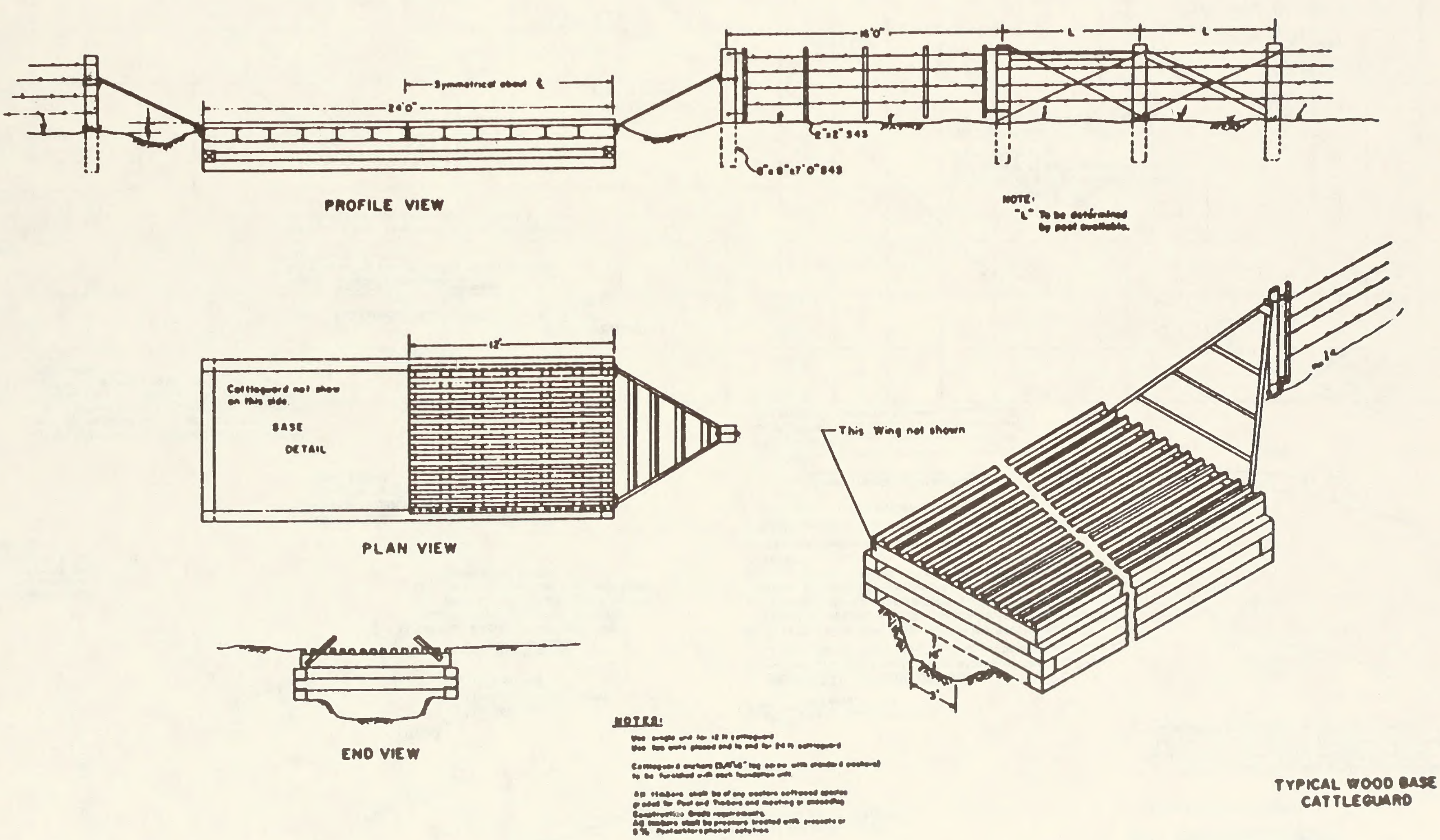

1' Minimum
2" Crown
Minimum 2:1
CMP Culvert
Natural Ground

C.M.P. CULVERT INSTALLATION
EMBANKMENT SECTION

General Notes:

1. In bedding of CMP Culverts, if the foundation is rock, excavate to depth of 8 in. below culvert grade and replace with earth cushion.
2. Minimum cover over culvert is one foot (1').
3. Minimum culvert diameter 18".
4. Minimum culvert spacing
   - (a) 1-2% grade - 1000 feet minimum
   - (b) 2-4% grade - 800 feet minimum
   - (c) 4-6% grade - 600 feet minimum
   - (d) 6-8% grade - 400 feet minimum
   - (e) 8-10% grade - 250 feet minimum
5. Maximum grade 10%

TYPICAL CULVERT INSTALLATION


Symmetrical about ℄
24'0"
PROFILE VIEW
16'0"
L
L
2"x2" S4S
6"x8"x7'0" S4S
NOTE:
"L" To be determined
by post available.
12'
Cattleguard not show
on this side.
BASE
DETAIL
PLAN VIEW
END VIEW
This Wing not shown

NOTES:

Use single unit for 12 ft cattleguard
Use two units placed end to end for 24 ft cattleguard

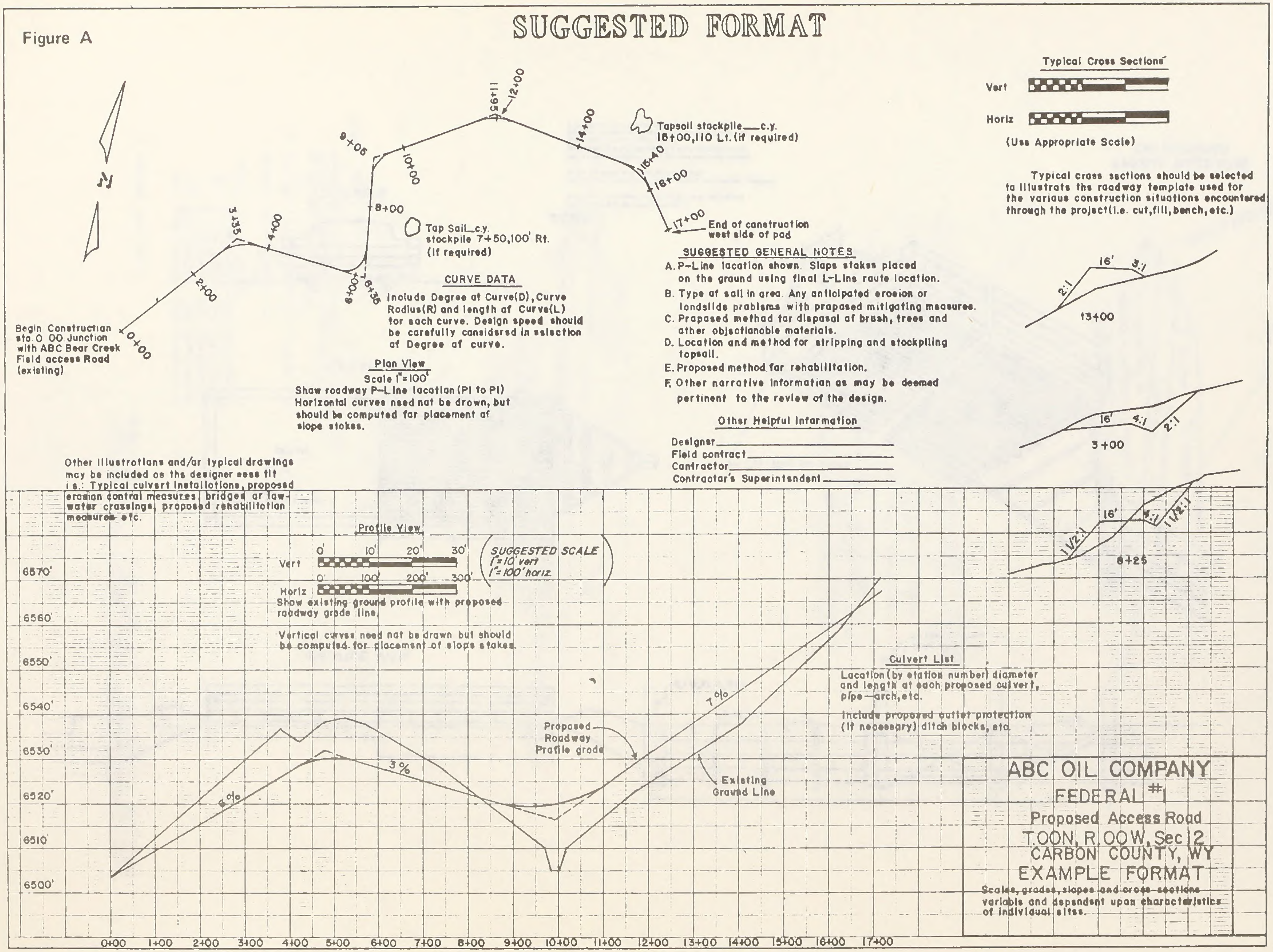
Cattleguard surface (3/4"x6" lag screw with standard washers)
to be furnished with each foundation unit.

All timbers shall be of any western softwood species
graded for Post and Timbers and meeting or exceeding
Construction Grade requirements.
All timbers shall be pressure treated with creosote or
5% Pentachlorophenol solution.

TYPICAL WOOD BASE
CATTLEGUARD

Figure A

SUGGESTED FORMAT



0+00
2+00
3+35
4+00
6+00
6+35
8+00
9+05
10+00
11+95
12+00
14+00
15+40
16+00
17+00
Begin Construction sta.0 00 Junction with ABC Bear Creek Field access Road (existing)
Top Soil__c.y. stockpile 7+50,100' Rt. (if required)
Topsoil stockpile___c.y. 15+00,110 Lt.(if required)
End of construction west side of pad
Typical Cross Sections
Vert
Horiz
(Use Appropriate Scale)
16'
3:1
2:1
13+00
4:1
3+00
1 1/2:1
8+25
Profile View
0'
10'
20'
30'
100'
200'
300'
SUGGESTED SCALE
1"=10' vert
1"=100' horiz.
6570'
6560'
6550'
6540'
6530'
6520'
6510'
6500'
6%
3%
7%
Proposed Roadway Profile grade
Existing Ground Line
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00

Typical cross sections should be selected to illustrate the roadway template used for the various construction situations encountered through the project(i.e. cut,fill,bench,etc.)

CURVE DATA

Include Degree of Curve(D), Curve Radius(R) and length of Curve(L) for each curve. Design speed should be carefully considered in selection of Degree of curve.

Plan View

Scale 1"=100'

Show roadway P-Line location (PI to PI) Horizontal curves need not be drawn, but should be computed for placement of slope stakes.

SUGGESTED GENERAL NOTES

A. P-Line location shown. Slope stakes placed on the ground using final L-Line route location.
B. Type of soil in area. Any anticipated erosion or landslide problems with proposed mitigating measures.
C. Proposed method for disposal of brush, trees and other objectionable materials.
D. Location and method for stripping and stockpiling topsoil.
E. Proposed method for rehabilitation.
F. Other narrative information as may be deemed pertinent to the review of the design.

Other Helpful Information

Designer________________
Field contract________________
Contractor________________
Contractor's Superintendent________________

Other illustrations and/or typical drawings may be included as the designer sees fit i.e.: Typical culvert installations, proposed erosion control measures, bridges or low-water crossings, proposed rehabilitation measures etc.

Show existing ground profile with proposed roadway grade line.

Vertical curves need not be drawn but should be computed for placement of slope stakes.

Culvert List

Location (by station number) diameter and length at each proposed culvert, pipe—arch, etc.

Include proposed outlet protection (if necessary) ditch blocks, etc.

ABC OIL COMPANY
FEDERAL #1
Proposed Access Road
T.OON, R.OOW, Sec 12
CARBON COUNTY, WY
EXAMPLE FORMAT

Scales, grades, slopes and cross-sections variable and dependent upon characteristics of individual sites.

APPENDIX

G

APPENDIX G

METHODOLOGY FOR DEVELOPING RANCH BUDGETS

The ranch budgets used for the Carlsbad RMP/EIS were developed using primary data from the BLM, CRA allotment case files, and from the New Mexico State University (NMSU) Agricultural Experiment Station Bulletin, "Organization, Costs, and Returns of Cattle Ranches in Southeastern New Mexico 1979" and the New Mexico Livestock Reporting Services.

The total operation for each livestock operator was estimated by grouping the AUMs by allotment for each operator in the three-county area. The 5-year average was used for BLM AUMs since it was determined that this best represented the operator's actual operation. It was assumed that the AUMs for State and private lands as shown in the allotment case files were indicative of the actual operation. The total AUMs were then converted into AUs. The operations were classified into different ranch sizes according to the number of AUs). The different categories were small 0-199 AUs, medium 200-499 AUs, and large 500+ AUs. After the operations were categorized, the average number of AUs for each ranch size was calculated by dividing the number of AU's by the number of operators. Those operators who had Section 15 leases only were excluded from the totals since there was insufficient information to determine the total operation.

The Carlsbad Input-Output Model was prepared by Regional Analytics, Santa Barbara, California, under contract with BLM. The following discussion is a summation of the methodology used by Regional Analytics. The details of the methodology used is contained in Technical Report X, which is available for review at the CRA. The study area contains the entire CRA in southeastern New Mexoco which includes Eddy, Otero, and Chaves Counties.

Regional Analytics used five steps in creating the national input-output table from a commodity-by-industry format, in which it is originally published, to an industry-by-industry form required for regionalization. This conversion is needed because the regionalization is accomplished using regional employment data which are collected and reported on an industry, rather than commodity basis. The second step is the collection of employment data using published sources. The third step involves using the regional employment estimates to calculate location quotients, and with these location quotients, to scale down the national table to a regional table. The fourth step is th estimation of coefficients for special sectors that cannot be estimated from the national table directly. The fifth step involves calculating the transactions table, and balancing it.

TABLE G-1

SMALL COMMERCIAL COW-CALF RANCH (Average of 65 AU) ESTIMATED RECEIPTS, COSTS AND NET RETURNS in the Carlsbad Resource Area, 1984

ITEM	NUMBER PER RANCH	AVERAGE WEIGHT	PRICE PER CWT	VALUE PER HEAD	RECEIPTS
		(CWT)	[-----------(Dollars)	----------	]
CASH RECEIPTS					
CATTLE					
Cows	11	7.800	40.65		3487.77
Yearling Heifers 1-2					
Yearling Steers 1-2	1	6.000	61.90		371.40
Heifer Calves	9	3.480	62.93		1970.96
Steer Calves	19	3.880	72.26		5327.00
Bulls	1	13.000	51.20		663.60
SUBTOTAL.	41				11820.73
NON-CASH RECEIPTS					
LIVESTOCK INVENTORY CHANGE					
Cows				363.53	363.53
Yearling Heifers 1-2	1				
Yearling Steers 1-2				273.86	-547.72
Heifer Calves	-2			272.36	-272.36
Steer Calves	-1				
Bulls					
SUBTOTAL.	2				-456.55
LIVESTOCK PERQUISITES					
Steer Calves	1	3.880	72.26		280.36
TOTAL RECEIPTS					11644.54

ITEM	PURCHASED INPUTS	FUEL & REPAIRS	REPAIR & MAINTENANCE	DEPRECIATION	TOTAL
	[---------------------	---(Dollars)	---------	----------	]
COSTS					
FEED:	2665.61				2665.61
LEASES AND GRAZING FEES:	1330.76				1330.76
LIVESTOCK EXPENSES:	1937.82				1937.82
LABOR (HIRED):	147.00				147.00
OTHER:	1965.74				1965.74
MACHINERY AND EQUIPMENT		1964.63		1229.99	3194.62
IMPROVEMENTS:			729.43	1924.04	2653.47
TOTAL COSTS	8046.93	1964.63	729.43	3154.03	13896.02
RETURNS TO OPERATOR LABOR, MANAGEMENT, AND CAPITAL					-2251.48

TABLE G-2
MEDIUM COMMERCIAL COW-CALF RANCH (Average of 269 AU) ESTIMATED RECEIPTS, COSTS AND NET RETURNS in the Carlsbad Resource Area, 1984

ITEM	NUMBER PER RANCH	AVERAGE WEIGHT	PRICE PER CWT	VALUE PER HEAD	RECEIPTS
		(CWT)	[-----------(Dollars)----------]		
CASH RECEIPTS					
CATTLE					
Cows	39	8.000	40.65		12682.80
Yearling Heifers 1-2	2	5.800	57.48		666.76
Yearling Steers 1-2	15	6.200	61.90		5756.70
Heifer Calves	43	3.580	62.93		9687.44
Steer Calves	76	3.980	72.26		21857.20
Bulls	3	14.000	51.20		2150.40
SUBTOTAL.	178				52801.30
NON-CASH RECEIPTS					
LIVESTOCK INVENTORY CHANGE					
Cows	-6			451.66	-2709.96
Yearling Heifers 1-2	2			414.51	829.02
Yearling Steers 1-2	-1			388.10	-388.10
Heifer Calves	5			279.68	1398.40
Steer Calves	-1			277.92	-277.92
Bulls	-1			1068.51	-1068.51
SUBTOTAL.	-2				-2217.07
LIVESTOCK PERQUISITES					
Steer Calves	1	6.200	61.90		383.78
TOTAL RECEIPTS					50968.01

ITEM	PURCHASED INPUTS	FUEL & REPAIRS	REPAIR & MAINTENANCE	DEPRECIATION	TOTAL
	[----------------------(Dollars)----------------------]				
COSTS					
FEED:	14142.20				14142.20
LEASES AND GRAZING FEES:	4880.52				4880.52
LIVESTOCK EXPENSES:	4167.07				4167.07
LABOR (HIRED):	1392.00				1392.00
OTHER:	5481.23				5481.23
MACHINERY AND EQUIPMENT		3617.98		2975.40	6593.38
IMPROVEMENTS:			2431.76	5615.31	8047.07
TOTAL COSTS	30063.02	3617.78	2431.76	8590.71	44703.40
RETURNS TO OPERATOR LABOR, MANAGEMENT, AND CAPITAL					6264.61

TABLE G-3

LARGE COMMERCIAL COW-CALF RANCH (Average of 674 AU) ESTIMATED RECEIPTS, COSTS AND NET RETURNS in the Carlsbad Resource Area, 1984

ITEM	NUMBER PER RANCH	AVERAGE WEIGHT	PRICE PER CWT	VALUE PER HEAD	RECEIPTS
		(CWT)	[-----------(Dollars)----------		]
CASH RECEIPTS					
CATTLE					
Cows	80	8.000	40.65		26016.00
Yearling Heifers 1-2	20	5.800	57.48		6667.68
Yearling Steers 1-2	122	6.200	61.90		46821.16
Heifer Calves	84	3.580	62.93		18924.30
Steer Calves	90	3.980	72.26		25883.52
Bulls	2	14.000	51.20		1433.60
SUBTOTAL.	276				125346.27
NON-CASH RECEIPTS					
LIVESTOCK INVENTORY CHANGE					
Cows	4			451.66	1806.64
Yearling Heifers 1-2	2			414.51	829.02
Yearling Steers 1-2	2			388.10	776.20
Heifer Calves	5			279.68	1398.40
Steer Calves	-9			277.92	-2501.28
Bulls	1			1068.51	1068.51
SUBTOTAL.	5				3377.49
LIVESTOCK PERQUISITES					
Steer Calves	1	6.200		61.90	383.78
Heifer Calves	1	3.580		62.93	225.28
SUBTOTAL.	2				609.06
TOTAL RECEIPTS					129732.82

ITEM	PURCHASED INPUTS	FUEL & REPAIRS	REPAIR & MAINTENANCE	DEPRECIATION	TOTAL
	[----------------------(Dollars)--------------------				]
COSTS					
FEED:	30129.96				30129.96
LEASES AND GRAZING FEES:	10477.02				10477.02
LIVESTOCK EXPENSES:	7553.65				7553.65
LABOR (HIRED):	11970.00				11970.00
OTHER:	10382.47				10382.47
MACHINERY AND EQUIPMENT:		9094.00		9497.00	18591.00
IMPROVEMENTS:			7228.54	21902.38	29130.92
TOTAL COSTS	69463.10	9094.00	7228.54	31399.38	118235.02
RETURNS TO OPERATOR LABOR, MANAGEMENT, AND CAPITAL					11497.80

TABLE G-4
SMALL COMMERCIAL COW-CALF/SHEEP RANCH (Average of 167 AU) ESTIMATED RECEIPTS, COSTS AND NET RETURNS in the Carlsbad Resource Area, 1984

ITEM	NUMBER PER RANCH	AVERAGE WEIGHT	PRICE PER CWT	VALUE PER HEAD	RECEIPTS
		(CWT)	[-----------(Dollars)	----------	]
CASH RECEIPTS					
SHEEP					
Ewes, Aged	46	1.200	16.29		899.20
Ewes, Young	14	1.320	33.19		612.42
Lambs	268	.770	48.67		10029.09
Wethers	1	1.200	45.38		54.45
Bucks	1	1.400	45.38		63.53
SUBTOTAL.	330				11658.69
WOOL AND WOOL INCENTIVE PAYMENTS					8969.22
CATTLE					
Cows	6	7.810	40.65		1902.42
Yearling Heifers 1-2	1	6.000	57.48		344.88
Yearling Steers 1-2	1	6.200	61.90		383.78
Heifer Calves	9	3.48	62.93		1970.96
Steer Calves	15	3.880	76.44		4448.80
Bulls	1	13.000	47.17		613.21
SUBTOTAL.	33				
NON-CASH RECEIPTS					
LIVESTOCK INVENTORY CHANGE					
Ewes, Aged	28			17.14	479.92
Ewes, Young	12			60.85	730.20
Ewes, Yearling	15			60.85	912.75
Lambs	60			30.20	1812.00
Wethers	4			126.454	505.80
Bucks					
Cows					
Yearling Heifers 1-2	-1			451.66	-451.66
Yearling Steers 1-2					
Heifer Calves	-1			279.68	-279.68
SUBTOTAL.	112				3709.33
LIVESTOCK PERQUISITES					
Lambs	1	.770	48.60		37.42
Wethers	1	1.200	45.38		54.45
Steer Calves	1	3.880	76.44		296.58
SUBTOTAL.	9				388.45
TOTAL RECEIPTS					34389.74

ITEM	PURCHASED INPUTS	FUEL & REPAIRS	REPAIR & MAINTENANCE	DEPRECIATION	TOTAL
	[----------------------	--------(Dollars)	--------	------------	]
COSTS					
FEED:	2134.96				2134.96
LEASES AND GRAZING FEES:	3455.81				3455.81
LIVESTOCK EXPENSES:	2301.60				2301.60
LABOR (HIRED):	1853.50				1853.50
OTHER:	5538.32				5538.32
MACHINERY AND EQUIPMENT:		1129.44		689.60	1819.04
IMPROVEMENTS:			1625.16	6155.58	7780.74
TOTAL COSTS	15284.19	1129.44	1625.16	6845.18	24883.97
RETURNS TO OPERATOR LABOR, MANAGEMENT, AND CAPITAL					9505.77

TABLE G-5
MEDIUM COMMERCIAL COW-CALF/SHEEP RANCH (Average of 367 AU) ESTIMATED RECEIPTS, COSTS AND NET RETURNS in the Carlsbad Resource Area, 1984

ITEM	NUMBER PER RANCH	AVERAGE WEIGHT	PRICE PER CWT	VALUE PER HEAD	RECEIPTS
		(CWT)	[-----------	(Dollars)	----------]
CASH RECEIPTS					
SHEEP					
Ewes, Aged	101	1.200	16.29		1974.34
Ewes, Young	31	1.320	33.14		1356.08
Lambs	596	.770	48.60		22303.51
Wethers	3	1.200	45.38		163.36
Bucks	2	1.400	45.58		127.06
SUBTOTAL.	733				25924.35
WOOL AND WOOL INCENTIVE PAYMENTS					19806.64
CATTLE					
Cows	14	8.000	40.65		4552.87
Yearling Heifers 1-2	3	5.800	57.48		1000.15
Yearling Steers 1-2	2	6.200	61.90		767.56
Heifer Calves	19	3.580	62.93		4280.49
Steer Calves	33	3.980	72.26		9490.62
Bulls	1	14.000	51.20		716.80
SUBTOTAL.	72				20808.42
NON-CASH RECEIPTS					
LIVESTOCK INVENTORY CHANGE					
Ewes, Aged	17			17.14	291.38
Ewes, Young	7			60.85	425.95
Ewes, Yearling	9			60.85	547.65
Lambs	37			30.20	1117.40
Wethers	2			126.45	252.90
Bucks	1			70.25	70.25
Cows	-3			414.51	-1243.53
Yearling Heifers 1-2	-1			408.99	-408.99
Yearling Steers 1-2	-1			383.19	-383.19
Heifer Calves	-1			279.68	-279.68
SUBTOTAL.	67				390.14
LIVESTOCK PERQUISITES					
Lambs	2	.770	48.60		97.20
Wethers	3	1.200	45.38		136.14
Steer Calves	1	4.300	72.26		310.71
SUBTOTAL.	6				539.05
TOTAL RECEIPTS					67468.60

ITEM	PURCHASED INPUTS	FUEL & REPAIRS	REPAIR & MAINTENANCE	DEPRECIATION	TOTAL
	[----------------------		(Dollars)		--------------------]
COSTS					
FEED:	4683.25				4683.25
LEASES AND GRAZING FEES:	6609.36				6609.36
LIVESTOCK EXPENSES:	3380.72				3380.72
LABOR (HIRED):	12384.50				12384.50
OTHER:	8363.99				8363.99
MACHINERY AND EQUIPMENT:		3054.50		1948.00	5002.50
IMPROVEMENTS:			3521.61	13296.13	16817.74
TOTAL COSTS	35421.82	3054.50	3521.61	15244.13	57242.06
RETURNS TO OPERATOR LABOR, MANAGEMENT, AND CAPITAL					10226.54

TABLE G-6
LARGE COMMERCIAL COW-CALF/SHEEP RANCH (Average of 830.5 AU) ESTIMATED RECEIPTS, COSTS AND NET RETURNS in the Carlsbad Resource Area, 1984

ITEM	NUMBER PER RANCH	AVERAGE WEIGHT	PRICE PER CWT	VALUE PER HEAD	RECEIPTS
CASH RECEIPTS		(CWT)	[------------(Dollars)		----------]
SHEEP					
Ewes, Aged	229	1.200	16.29		4476.49
Ewes, Young	70	1.320	33.14		3062.13
Lambs	1347	.770	48.60		50407.43
Wethers	7	1.200	45.38		381.92
Bucks	4	1.400	45.38		254.12
SUBTOTAL.	1657				58582.09
WOOL AND WOOL INCENTIVE PAYMENTS					45062.15
CATTLE					
Cows	31	9.000	40.65		11341.35
Yearling Heifers 1-2	7	6.200	57.48		2494.63
Yearling Steers 1-2	6	6.500	61.90		2414.10
Heifer Calves	43	4.150	62.93		11229.85
Steer Calves	74	4.300	72.26		22993.13
Bulls	1	13.000	51.20		665.60
SUBTOTAL.	162				51138.66
NON-CASH RECEIPTS					
LIVESTOCK INVENTORY CHANGE					
Ewes, Aged	39			17.14	668.46
Ewes, Young	17			60.85	1034.45
Ewes, Yearling	21			60.85	1277.85
Lambs	84			30.20	2536.80
Wethers	6			126.45	758.70
Bucks	1			70.25	70.25
Cows	-7			414.51	-2901.57
Yearling Heifers 1-2	-1			408.99	-408.99
Yearling Steers 1-2	-1			383.19	-383.19
Heifer Calves	-1			279.68	-279.68
SUBTOTAL.	158				2373.08
LIVESTOCK PERQUISITES					
Lambs	4	.770	48.60		149.68
Wethers	7	1.200	45.38		381.19
Steer Calves	1	4.300	72.26		310.71
SUBTOTAL.	12				841.58
TOTAL RECEIPTS					157997.56

ITEM	PURCHASED INPUTS	FUEL & REPAIRS	REPAIR & MAINTENANCE	DEPRECIATION	TOTAL
	[----------------------	(Dollars)		-------------------]	
COSTS					
FEED:	10619.11				10619.11
LEASES AND GRAZING FEES:	10989.66				10989.66
LIVESTOCK EXPENSES:	5760.96				5760.96
LABOR (HIRED):	16691.50				16691.50
OTHER:	13963.77				13963.77
MACHINERY AND EQUIPMENT:	6816.50			4361.00	11177.50
IMPROVEMENTS:			8133.57	30053.57	38187.14
TOTAL COSTS	58025.00	6816.50	8133.57	34414.57	107389.64
RETURNS TO OPERATOR LABOR, MANAGEMENT, AND CAPITAL					50607.92

TABLE G-7

ESTIMATED SHORT TERM RECEIPTS, COSTS, AND RETURNS FOR ALTERNATIVE A RANCH SIZE CATEGORIES IN THE CARLSBAD RMP/EIS, 1984

	Cow			Sheep			Total 129 Ranches
	Small	Med.	Large	Small	Med.	Large	
Percent change	-0-	-0-	-0-	-0-	-0-	-0-	
Gross Income	11,644.54	50,968.01	129,732.82	34,389.74	67,468.60	157,997.67	4,981,674.73
Total Cash Costs	10,741.99	36,112.76	86,835.64	18,038.72	41,997.93	72,975.07	3,284,356.29
Returns Above Cash Costs	902.55	14,855.25	42,897.18	16,345.02	25,470.67	85,022.49	1,697,318.44
Depreciation	3,154.03	8,590.71	31,399.38	6,845.18	15,244.13	34,414.57	1,099,258.94
Returns to Operator Labor, Management, and Capital	-2,251.48	6,264.54	11,497.80	9,505.84	10,226.54	50,607.92	598,059.50
Herd Size (AU)	65.0	266.5	674.0	167.0	367.0	830.5	26,380.0

Source: BLM Files.

TABLE G-8

ESTIMATED LONG-TERM RECEIPTS, COSTS, AND RETURNS FOR ALTERNATIVE A RANCH SIZE CATEGORIES IN THE CARLSBAD RMP/EIS, 1984

	Cow			Sheep			Total 129 Ranches
	Small	Med.	Large	Small	Med.	Large	
Percent change	+4.2	+13.31	+17.38	+5.26	+10.84	+9.31	
Gross Income	12,139.22	57,790.24	152,291.66	36,297.09	74,791.28	172,716.22	5,531,512.93
Total Cash Costs	10,779.08	40,949.86	101,931.63	18,988.34	46,551.35	79,768.27	36,040,216.97
Returns Above Cash Costs	1,360.15	16,840.39	50,360.02	17,308.79	28,239.06	92,947.95	1,891,295.96
Depreciation	3,154.03	8,590.71	31,399.38	6,845.18	15,244.13	34,414.57	1,099,258.94
Returns to Operator Labor, Management, and Capital	-1,793.77	8,254.02	18,957.63	10,365.21	12,987.48	58,531.95	792,037.02
Herd Size (AU)	67.7	302.1	791.1	175.7	406.7	907.8	29,260.4

Source: BLM Files.

TABLE G-9

ESTIMATED SHORT-TERM RECEIPTS, COSTS, AND RETURNS FOR ALTERNATIVE B RANCH SIZE CATEGORIES IN THE CARLSBAD RMP/EIS, 1984

	Cow			Sheep			Total 129 Ranches
	Small	Med.	Large	Small	Med.	Large	
Gross Income	11,646.54	50,968.01	129,732.82	34,382.74	67,468.60	157,997.67	4,981,674.73
Total Cash Costs	10,342.09	36,112.69	86,835.64	18,038.79	41,997.93	72,975.07	3,284,356.29
Returns Above Cash Costs	1,304.45	14,855.32	42,897.18	16,343.95	25,470.67	85,022.49	1,697,318.44
Depreciation	3,154.03	8,590.71	31,399.38	6,845.18	15,244.13	34,414.57	1,099,258.94
Returns to Operator Labor, Management, and Capital	-1,849.58	6,264.61	11,497.80	9,498.77	10,226.54	50,607.92	598,059.50
Herd Size (AU)	65.0	266.5	674.0	167.0	367.0	830.5	26,380.0

Source: BLM Files.

TABLE G-10

ESTIMATED LONG-TERM RECEIPTS, COSTS, AND RETURNS FOR ALTERNATIVE B RANCH SIZE CATEGORIES IN THE CARLSBAD RMP/EIS, 1984

	Cow			Sheep			Total 129 Ranches
	Small	Med.	Large	Small	Med.	Large	
Gross Income	12,691.67	58,516.93	154,062.48	36,482.93	77,677.63	175,436.63	5,647,824.11
Total Cash Costs	11,269.62	41,464.78	103,116.89	19,085.55	48,348.77	81,024.69	3,608,164.72
Returns Above Cash Costs	1,422.75	17,052.15	50,945.60	17,397.40	29,328.91	94,411.94	2,039,659.39
Depreciation	3,154.03	15,244.13	31,399.38	6,845.18	15,244.13	34,414.57	1,099,258.94
Returns to Operator Labor, Management, and Capital	-1,731.86	1,812.37	19,543.19	10,453.84	14,079.21	59,995.94	940,450.45
Herd Size (AU)	70.8	306.0	800.3	176.6	422.5	922.1	29,892.1

Source: BLM Files.

TABLE G-11

ESTIMATED SHORT-TERM RECEIPTS, COSTS, AND RETURNS FOR ALTERNATIVE C RANCH SIZE CATEGORIES IN THE CARLSBAD RMP/EIS, 1984

	Cow			Sheep			Total 129 Ranches
	Small	Med.	Large	Small	Med.	Large	
Gross Income	11,646.54	50,968.01	129,732.82	34,382.74	67,468.60	157,997.67	4,981,674.73
Total Cash Costs	10,342.09	36,112.69	86,835.64	18,038.79	41,997.93	72,975.07	3,284,356.29
Returns Above Cash Costs	1,304.45	14,855.32	42,897.18	16,343.95	25,470.67	85,022.49	1,697,318.44
Depreciation	3,154.03	8,590.71	31,399.38	6,845.18	15,244.13	34,414.57	1,099,258.94
Returns to Operator Labor, Management, and Capital	-1,849.58	6,264.61	11,497.80	9,498.77	10,226.54	50,607.92	598,059.50
Herd Size (AU)	65.0	266.5	674.0	167.0	367.0	830.5	26,380.0

Source: BLM Files.

TABLE G-12

ESTIMATED LONG-TERM RECEIPTS, COSTS, AND RETURNS FOR ALTERNATIVE C RANCH SIZE CATEGORIES IN THE CARLSBAD RMP/EIS, 1984

	Cow			Sheep			Total 129 Ranches
	Small	Med.	Large	Small	Med.	Large	
Gross Income	12,255.68	57,541.64	152,253.16	35,987.40	74,717.62	172,716.16	5,531,579.87
Total Cash Costs	10,882.49	40,773.69	101,905.82	18,826.34	46,506.38	79,768.32	3,642,324.33
Returns Above Cash Costs	1,373.19	16,767.95	50,347.34	17,161.06	28,211.29	92,947.84	1,889.255.54
Depreciation	3,154.03	8,590.71	31,399.38	6,845.18	15,244.13	34,414.57	1,099,258.94
Returns to Operator Labor, Management, and Capital	-1,780.34	8,177.24	18,947.96	10,315.88	12,967.11	58,533.27	789,996.60
Herd Size (AU)	68.3	300.8	796.0	174.2	406.3	907.8	29,261.6

Source: BLM Files.

TABLE G-13

ESTIMATED SHORT-TERM RECEIPTS, COSTS, AND RETURNS FOR ALTERNATIVE D RANCH SIZE CATEGORIES IN THE CARLSBAD RMP/EIS, 1984

	Cow			Sheep			Total 129
	Small	Med.	Large	Small	Med.	Large	Ranches
Gross Income	11,574.80	51,995.91	131,407.37	29,524.92	57,821.57	138,606.69	4,766,343.52
Total Cash Costs	10,277.90	36,844.02	87,953.39	15,455.60	35,989.79	64,014.93	3,176,302.91
Returns Above Cash Costs	1,296.91	15,151.89	43,453.92	14,079.39	21,831.82	74,591.78	1,590,641.51
Depreciation	3,154.03	8,590.71	31,399.38	6,845.18	15,244.13	34,414.57	1,099,258.94
Returns to Operator Labor, Management, and Capital	-1,857.01	6,565.53	12,051.58	7,135.78	6,582.13	40,175.76	490,872.57
Herd Size (AU)	64.5	271.8	682.6	143.0	314.5	745.2	25,347.6

Source: BLM Files.

TABLE G-14

ESTIMATED LONG-TERM RECEIPTS, COSTS, AND RETURNS FOR ALTERNATIVE D RANCH SIZE CATEGORIES IN THE CARLSBAD RMP/EIS, 1984

	Cow			Sheep			Total 129
	Small	Med.	Large	Small	Med.	Large	Ranches
Gross Income	11,646.54	50,968.01	129,732.82	34,382.74	67,468.60	157,997.56	4,981,674.73
Total Cash Costs	10,342.09	36,112.69	86,835.64	18,038.79	41,997.93	72,975.07	3,284,356.29
Returns Above Cash Costs	1,304.45	14,855.32	42,897.18	16,343.95	25,470.67	85,022.49	1,697,318.44
Depreciation	3,154.03	8,590.71	31,399.38	6,845.18	15,244.13	34,414.57	1,099,258.94
Returns to Operator Labor, Management, and Capital	-1,849.58	6,264.61	11,497.80	9,498.77	10,226.54	50,607.92	598,059.50
Herd Size (AU)		266.5	674.0	167.0	367.0	830.5	26,380.0

Source: BLM Files.

TABLE G-15

ESTIMATED RECEIPTS, COSTS, AND RETURNS FOR NO GRAZING ALTERNATIVE RANCH SIZE CATEGORIES IN THE CARLSBAD RMP/EIS, 1984

	Cow			Sheep			Total 129
	Small	Med.	Large	Small	Med.	Large	Ranches
Gross Income	4,711.82	20,315.16	73,162.35	8,774.81	25,187.72	74,116.02	2,192,383.37
Total Cash Costs	4,197.71	14,395.21	48,968.92	4,590.45	15,677.58	34,230.33	1,439,033.25
Returns Above Cash Costs	514.11	5,919.95	24,193.43	4,184.36	9,510.14	39,885.69	753,350.12
Depreciation	3,154.03	8,590.71	31,399.38	6,845.18	15,244.13	34,414.57	1,099,258.94
Returns to Operator Labor, Management, and Capital	-82,639.92	-2,670.76	-7,205.95	-2,660.82	-5,733.99	+5,471.122	-345,908.82
Herd Size (AU)	25.6	106.2	380.1	42.5	137.0	389.6	11,549.7

Source: BLM Files.

APPENDIX

H

APPENDIX H

RECREATION OPPORTUNITY SPECTRUM INVENTORY AND EVALUATION PROCESS

The Recreation Opportunity Spectrum (ROS) provides a framework for inventory planning and management of the recreation resource. The ROS recognizes that people differ in their needs and the experience they desire. Also, the resource base is not uniform; it varies with its potential for providing recreational experiences (i.e., recreational opportunities available on Red Bluff Reservoir are not the same as those available in the Guadalupe Mountains). The ROS allows managers to characterize all possible combinations of recreational opportunities and resources and arrange combinations of activity, setting, and experience opportunities along a continuum. Once these opportunities have been defined, managers are able to ensure that these opportunities are provided and are able to assess the impacts of other resource actions on the recreation resource.

To facilitate its use in planning, the ROS is divided into six classes which are defined in a combination of activity, setting, and experience opportunities. Evaluation of ROS classes is based upon their application against specific criteria. These are:

1. Remoteness. The distance the area is from roads.

2. Size. The size of an area provides a partial measure of the opportunity to experience feelings of isolation and self-reliance.

3. Evidence of Human Use. The extent to which the natural scenery has been modified by land treatments or construction of structures.

4. Social Setting. The number and types of contacts between recreationists.

5. Managerial Setting. The type and extent of facilities provided to support recreation use and the type of restrictions imposed on recreationists by the managing agency.

Using this sytem, the predicted impacts of each proposal are anticipated and extreme impacts to the recreation resource are mitigated through the planning and design stage. Map 3-4 illustrates the ROS classes as a result of the inventory and evaluation process. A more thorough discussion of the ROS procedures is included in BLM Manual, Section 8320 and 8321.

APPENDIX H

THE RECREATION OPPORTUNITY SPECTRUM CLASS DESCRIPTIONS

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Primitive	Opportunity for isolation from the sights and sounds of man, to feel a part of the natural environment, to have a high degree of challenge and risk, and to use outdoor skills.	Area is characterized by an essentially unmodified natural environment of fairly large size. Concentration of users is very low. Only facilities essential for resource protection are used. Spacing of groups is informal and dispersed to minimize contacts between groups. Motorized use within the area is not permitted.	Camping hiking, climbing. Enjoying scenery or natural features. Nature study, photography, horseback riding, caving, hunting (big game, small game upland bird, waterfowl)
Semiprimitive Nonmotorized	Some opportunity for isolation from the sights and sounds of man, but not as for primitive opportunities. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills.	Area is characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is low and on-site restrictions are subtle. Facilities are provided for the protection of resource values and the safety of users only. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is not permitted.	Ski touring and snowshoeing. Swimming, diving (skin and scuba, fishing, canoeing, sailing, river running (non-motorized craft
Semiprimitive Motorized	Some opportunity for isolation from the sights and sounds of man. Opportunity to have a high degree of interaction with the natural environment, to have moderate challenge and risk, and to use outdoor skills. Explicit opportunity to use motorized equipment while in the area.	Area is characterized by a predominantly unmodified natural environment of moderate to large size. Concentration of users is low and on-site restrictions are subtle. Facilities are provided for the protection of resource values and the safety of users only. Spacing of groups may be formalized to disperse use and limit contacts between groups. Motorized use is permitted.	Same as above, plus the following: Off-Road Vehicle Use (4-wheel drive, dune buggy, dirt bike, snowmobile, and power boating

APPENDIX H (continued)

Opportunity Class	Experience Opportunity	Setting Opportunity	Activity Opportunity
Roaded Natural	About equal opportunities for affiliation with other groups and for isolation from the sights and sounds of man. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities are not very important. Practice of outdoor skills may be important. Opportunities for both motorized and nonmotorized recreation are present.	Area is characterized by a generally natural environment. Resource modification and utilization practices harmonize with the natural environment. Concentration of users is low to moderate. Rustic facilities are provided for user convenience as well as for safety and resource protection. Conventional motorized use is provided for in construction standards and design of facilities.	All activities listed previously plus the following: picnicking, rock collecting wood gathering, auto touring downhill skiing, snowplay ice skating, water skiing, and other water sports. Hang gliding, interpretive use rustic resorts and organized camps.
Rural	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. These factors are generally more important than the natural setting. Opportunities for wildland challenges, risk-taking, and testing of outdoor skills are unimportant.	Area is characterized by a substantially modified natural environment. Resource modification and utilization practices are obvious. The concentration of users is often moderate to high. A considerable number of facilities are present. Facilities are provided specific activites and are designed for moderate to high use. Facilities for intensive motorized user are available.	All activities listed previously plus the following: Competition games spectator sports, bicycling, jogging, outdoor concerts, and modern resorts
Modern Urban	Opportunities to experience affiliation with individuals and groups are prevalent as is the convenience of sites and opportunities. Experiencing the natural environment and the use of outdoor skills are largely unimportant.	Area is characterized by a highly modified environment. Vegetation is often exotic and manicured. Sights and sounds of man, on-site are predominant. Large numbers of users can be expected. Modern facilities are provided for the use and convenience of large numbers of people. Controls and restrictions are obvious and numerous. Facilities for high intensity motor use and parking are present with forms of mass transit often available.	All activities listed previously.

Source: BLM Roswell District Files, 1985.
Note: [a] This listing of activity opportunities is provided for illustrative purposes. It is not an all-inclusive list of activity opportunities on the public land.

APPENDIX

I

APPENDIX I

VISUAL RESOURCES INVENTORY AND EVALUATION PROCESS

BLM's VRM program functions in two ways. First, all public land is inventoried and the visual resources evaluated. The end result is the identification of VRM classes. Second, the program provides the framework for evaluating the anticipated impacts of proposed projects on the visual resource. The contrast rating system is used ot make this evaluation.

Inventory. Evaluation of the scenic quality of a landscape, the visual sensitivity of that landscape to change, and the distance of the landscape from a viewer determines the final VRM class. A discussion of each aspect of this evaluation follows.

Scenic Quality: Perhaps scenic quality is best described as the overall impression one retains after driving through or walking through an area. During the inventory, an area is divided into units which are primarily homogeneous in terms of landforms, vegetation, and structures. Each of these units are then evaluated in terms of seven key factors (landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications). Rating scores are assigned to each factor according to uniform criteria. The sum of the rating scores are translated into three scenic quality classes: A, B, or C.

Visual Sensitivity: Sensitivity of the landscape is measured in terms of the degree of concern expressed by the public toward scenic quality. A matrix combines user attitude and use volume to an overall rating of high, medium, or low sensitivity.

Distance Zones: Distance zones are determined in the field by traveling along each major route and observing the area that can be viewed. The areas are defined as the foreground/middle ground, background, or seldom seen.

Management Classes. VRM classes describe the different degree of modification allowed in the basic elements of the landscape. These classes are determined through a matrix which combines scenic quality, visual sensitivity, and distance zones. The resulting classes are mapped and become the basis used to assess the impact of proposed activities. The following defines the VRM classes and how visual class ratings are developed. Map 3-5 illustrates the VRM classes as a result of the inventory and evaluating process.

Class I	Applies only to classified special areas; e.g., Wilderness, Primitive, and Natural Areas. This quality standard is established through legislation or policy. Only natural ecological changes are allowed.
Class II	Landscapes with Class A scenery quality, or Class B scenery quality in the foreground/middleground zone with high visual sensitivity. Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the characteristic landscape.
Class III	Landscapes with Class B scenery quality and high visual sensitivity in the background zone, or with Class B scenery quality and medium visual sensitivity in the foreground/middleground zone or with Class C scenery of high visual sensitivity in the foreground/middleground zone. Changes in the basic elements (form, line, color, texture) caused by management activity may be evident in the characteristic landscape; however, the changes should remain subordinate to the visual strength of the existing character.

VISUAL RESOURCES INVENTORY AND EVALUATION PROCESS
(continued)

Class IV Landscapes with Class B scenery quality and high visual sensitivity in the seldom seen visual zone, or with Class B scenery quality and medium or low visual sensitivity in the background or seldom seen zones, or with Class C scenery quality (except with high sensitivity in the foreground/middleground zone). Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.

Contrast Rating System. The degree to which a proposed project affects the visual quality of the landscape depends on the amount of visual contrast that is created between the activity and the existing landscape. The contrast rating system is used to assess this contrast.

The system reduces a landscape to its major features (land and water, vegetation, and structures) and each feature into its basic elements (form, line, color, and texture). The predicted contrast of the proposal against each landscape feature then indicates the total anticipated visual impact.

For each management class, there are maximum acceptable ratings for each element and any one feature.

Conclusion. Using this system, the predicted impacts of each proposal are anticipated and extreme visual contrasts are mitigated during the planning and design stage. A more thorough discussion of the VRM procedures, is found in BLM Manual Sections 8411 and 8431 located in the Resource Area office.

GLOSSARY

ACCESS TRACT. An inventory unit containing the smallest possible area of public land for which legal access needs were evaluated in the Carlsbad Resource Management Plan. Access tract boundaries coincide with encircling public roads and sometimes include one or more of the following features: State lines, County lines, National Forest or National Park boundaries.

ACTIVITY PLAN. A more detailed and specific management plan for a single resource program or plan element undertaken to implement the more general resource management plan decisions. An activity plan is prepared for specific areas to reach specific resource management objectives within stated time frames. Detailed management actions, including such things as projects, treatments, other on-the-ground activities, and schedules are described in the document. Activity planning is the third tier in the BLM planning system. Examples include Allotment Management Plans, Cooperative Management Plans, Cultural Resources Management Plans, Recreation Area Management Plans, Transportation Plans, and Habitat Management Plans.

ALTERNATIVE. This term refers to the different ways of addressing the planning issue(s) and management activities considered in the planning process. These provide the decisionmaker and the public a clear basis for choices among options. Every planning effort involves the development of several complete, reasonable alternatives for resolving the issue(s). One of the alternatives offered is the continuation of present management (no change) while the other alternatives provide a range of choices for issue resolution of the issues. One of the alternatives, a modification of one, or a combination of several alternatives, is selected at the end of the planning process and approved as the plan.

ALLOTMENT MANAGEMENT PLAN (AMP). A documented program which applies to livestock operations on public land, which is prepared in consultation with the permittee(s) or lessee(s) involved. This program prescribes the manner in which, and extent to which, livestock operations will be conducted in order to meet the multiple-use objectives for the public land as determined through land use planning. It describes the type, location, ownership, and general specifications for the rangeland improvements to be installed and maintained on the public land and may contain other provisions for livestock grazing or other objectives as prescribed by the authorized officer.

ANIMAL DAMAGE CONTROL. Control measures applied to any animal species causing damage to valuable resources (livestock, crops, and rangelands) or posing threats to the safety of humans and associated resources.

ANIMAL UNIT (AU). Considered to be one mature (1,000 lbs.) cow with a calf less than six months of age at side, or its equivalent (1 horse = 2 AU, 5 sheep or goats = 1 AU), based upon average daily forage consumption of 26 pounds of dry matter per day.

ANIMAL UNIT MONTH (AUM). The amount of food or forage necessary for the sustenance of one cow or its equivalent for a period of one month.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). Areas within the public lands where special management attention is required to protect and prevent irreparable damage to important cultural or scenic values, biologic resources, other natural systems, or to provide protection from natural hazards.

AREA MANAGER. The BLM line official in charge of managing a resource area and associated office; an Area Manager reports to a District Manager. An Area Manager is the first level line official and resource manager in BLM.

AUTHORIZED OFFICER. Any person authorized by the Secretary of the Interior, or his representative, to administer regulations.

BANKHEAD-JONES LANDS (L.U. LAND). Title III of the Bankhead-Jones Farm Tenant Act of July 22, 1937, authorized purchase of privately-owned submarginal farmlands incapable of producing sufficient income to support the family of each farm owner. These acquired lands became known as "Land Utilization Projects," and were subsequently transferred from jurisdiction of the U.S. Department of Agriculture to the U.S. Department of the Interior and are now administered by the BLM.

BRINE. A highly saline solution. A solution containing appreciable amounts of sodium chloride (NaCl) and other salts.

CADASTRAL SURVEY. A survey which creates, makes, defines, retraces, or reestablishes boundaries and subdivisions of the public land in the United States.

CALICHE. A layer in the soil which is more or less cemented by calcium carbonates ($CaCO_3$), commonly found in arid and semi-arid regions.

CAMBRIAN. The oldest of the periods of the Paleozoic Era; also the system of strata deposited during that period. (American Geological Institute).

CARRYING CAPACITY. The maximum stocking rate possible in a given environment which can be maintained without inducing damage to vegetation or related resources. Carrying capacity may vary annually in the same area due to fluctuating weather conditions and forage production.

CASING, CEMENTING, AND PLUGGING. A variety of subsurface Oil and Gas operations which are carried out during different phases of oil production. Casing refers to metal pipe of various size and weight used for protective purposes downhole when an oil or a gas well is drilled. Cementing is the process of bonding the outside of the casing to the exposed rock formation. Plugging refers to the abandonment of an oil or a gas well once the hydrocarbons have been extracted, the absence of hydrocarbons in payable quantities has been established and/or the well is of no use as a water injection or a saltwater disposal well. Plugging is accomplished by the placement of cement plugs at various downhole depths.

CAVE RESOURCE PRIMARY OCCURRENCE ZONE. That portion of a resource area with the highest known occurrence of caves and karst features and having the highest probability for additional cave resources.

CHARACTERISTIC LANDSCAPE. The visual characteristics of existing landscape features within an area. The term does not necessarily refer to natural landscape character only. It can also refer to farmlands, timberlands or other landscape types.

COLOR-OF-TITLE. A claim based on an erroneous but good faith claim of title.

CONCERN. An apprehension, or point of dispute, involving a resource management activity or land use where the relationship between the activity or use and potential undesirable effects is apparent but not well defined. Generally, a concern is of note to an individual, or a few individuals, as opposed to a planning issue which is of general importance. (See Planning Issue.)

CONTRAST. A term used in visual resource management. It refers to the opposition or dissimilarity of different forms, lines, colors, or textures in a landscape.

COOPERATIVE MANAGEMENT PLAN (CMP). Written plans designed to enhance range condition by improving livestock distribution and providing the proper use and periodic rest of available forage on public land. These plans specify goals and objectives for grazing management and the steps required to attain the desired results on individual allotments.

CRETACEOUS. The third and latest of the periods included in the Mesozoic Era; also the system of strata deposited in the Cretaceous Period.

CRUCIAL HABITAT. Those portions of the biologic population habitat that, if destroyed or adversely modified, would result in population reductions to a greater extent than destruction of other portions of the habitat.

CULTURAL RESOURCE INVENTORY CLASSES. Class I - Existing data inventory: A Class I inventory refers to a narrative overview (cultural resource overview) derived from existing cultural resource information. It also refers to compilations of existing cultural resource site record data which is from the basis of the BLM's site record system.

Class II - Sampling field inventory: A sample-oriented field inventory designed to locate and record from surface and exposed profile indications cultural resource sites within a defined area. The sampling strategy is designed so that it allows an objective estimate of the nature and distribution of cultural resources in the entire defined area. The Class II inventory is a tool used in management and planning activities to predict the presence of cultural resources in the defined area.

Class III - Intensive field inventory: An intensive field inventory designed to locate and record from surface and exposed profile indications all cultural resource sites within a specified area. Normally, upon completion of such inventories, no further cultural inventory work is needed. A Class III inventory is appropriate for small project areas, all areas to be disturbed, and primary cultural resource areas.

CULTURAL RESOURCES. Those fragile and nonrenewable remains of human activity, occupation, or endeavor which may be represented by districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, or natural features. They consist of (1) physical remains, (2) areas where significant human events occurred--even though physical evidence of that event is gone, and (3) the environment immediately surrounding resources.

CUMULATIVE IMPACT. The environmental impact resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of the agency (Federal or non-Federal) or person(s) undertaking other actions. Cumulative impacts can result from individual minor but collectively significant actions taking place over a period of time.

DECLARED GROUNDWATER BASIN. An area with definite hydrogeologic boundaries, designated by the state engineer to prevent the impairment of existing water rights and to ensure the orderly development of water rights.

DEFERRED ROTATION GRAZING SYSTEM. Discontinuance of grazing on various parts of a range in succeeding years, allowing each part to rest successively during the growing season to permit seed production, establishment of seedlings, or restoration of plant vigor. At least two, but usually three or more, separate units are required.

DISPERSED RECREATION. Pleasure-seeking activities which may occur over wide areas. Density of use is normally low and facility developments are non-existent.

DISPOSAL LANDS. Any method of removing lands from BLM administration: i.e., sale, exchange, withdrawal, or R&PP lease.

DISPOSAL ZONE. An identified area in which a large portion of the Federal lands may be suitable for disposal. In these areas an overall reduction of Federal acres would be allowed. All lands to be disposed of would still have to meet Federal Land Policy and Management Act disposal criteria and be free of any major conflicts with Threatened or Endangered listed species, floodplains and wetlands, critical wildlife habitat, cave resources, cultural sites, etc. Not all lands in disposal zones may be suitable for disposal as determined through the normal processing of each individual proposal.

DISTRICT MANAGER. The BLM line official in charge of managing a District and associated office. A District Manager reports to a State Director. Typically, there are two to four resource areas in a District.

DOLOMITE/DOLOMITIC LIMESTONE. Dolomite is a rock that approximates the mineral dolomite in composition [$CaMg(CO_3)_2$]. Dolomitic Limestone: a limestone in which dolomite is conspicuous, but calcite is more abundant.

DRILLING FLUIDS. A fluid suspension, generally aqueous, used in rotary drilling. Drilling fluids are pumped down through the drill pipe to seal off porous zones and to counter-balance the pressure of oil and gas. It consists of various substances in a finely divided state, among which Bentonite and Barite are commonly used.

EASEMENT. A document that ensures access across a described parcel of land along a described route and which encumbers the land.

ECOLOGICAL OR RANGELAND CONDITION. The present vegetation composition on a range site as compared to the climax plant community for that site. Four ecological condition classes are used to indicate the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site.

Ecological Condition Class	Percentage of Present Plant Community That is Climax for the Range Site
Excellent	76 - 100
Good	51 - 75
Fair	26 - 50
Poor	0 - 25

ECOSYSTEM. An interacting natural system including all the component organisms together with its nonliving environment.

ENDANGERED SPECIES. Federally listed - Any animal or plant species in danger of extinction throughout all or a significant portion of its range. State (Group I) - Species whose prospect of survival or recruitment in the State are in jeopardy in the foreseeable future. State (Group II) - Species whose prospect of survival or recruitment within the State may become jeopardized in the foreseeable future.

ENDEMIC. Restricted to or native to a particular area or region.

ENVIRONMENTAL ASSESSMENT (EA). A concise public document for which a Federal agency is responsible. This document serves to: (a) briefly provide sufficient evidence and analysis for deciding whether to prepare an environmental impact statement or a finding of no significant impact; (b) aid an agency's compliance with the National Environmental Policy Act (NEPA) when no environmental impact statement is necessary; (c) facilitate preparation of an environmental impact statement when one is necessary. An EA includes brief discussions of the need for the proposed action, of alternatives as required by Sec. 102(2) 9f NEPA, of the environmental impacts of the proposed action and other alternatives, and a listing of agencies and persons consulted.

ENVIRONMENTAL CONSEQUENCE OR IMPACT. A change in the environment caused by an act of man. The change should be (1) perceptible, (2) measurable, and (3) relatable through a change agent to a proposed action or alternative. A consequence is something that inevitably follows an antecedent (as a cause or agent). Consequences are synonymous with impacts and effects. In the CEQ regulations, consequences are caused by a proposed action.

ENVIRONMENTAL IMPACT STATEMENT (EIS). A detailed statement by the responsible official on (1) the environmental impact of the proposed action, (2) any adverse environmental effects which cannot be avoided should the proposal be implemented, (3) alternatives to the proposed action, (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and (5) any irreversible and irretrievable resource commitments which would be involved in the proposed action should it be implemented.

EROSION. The detachment and movement of soil or rock by water, wind, ice, or gravity.

FORAGE VIGOR. The relative health and well being of a plant as reflected by its ability to manufacture sufficient food reserves for growth, maintenance, and reproduction.

FOSSILIZED ALGAE. A class of thallophytes, including single-celled plants lithified through time.

FRAGILE SOILS. Soils that because of characteristics of steepness, cover, or inherent structural fragility, are especially subject to soil erosion and deterioration.

FRASCH MINING. A hydraulic method of sulphur mining in which superheated water that has been forced into the in-place deposits to dissolve the sulphur is pumped to the surface and treated to recover the sulphur.

FUGITIVE DUST EMISSIONS. Airborne particulate matter, usually soil, which is uncontaminated by industrial pollutants.

FULL FIRE SUPPRESSION. The policy of taking aggressive action to contain all fires within a given area by 10 a.m. of the day following ignition.

GALLINACEOUS GUZZLER. A man-made, permanent, self-filling water catchment structure designed for game bird use.

GEOPHYSICAL EXPLORATION. Oil and gas geophysical exploration refers to any activity on the public lands relating to the search for oil and gas resources, which requires physical presence upon the lands and which may result in damage to the public lands or the resources located thereon. It includes, but is not limited to, geophysical operations, construction of roads and trails, and cross-country transit of vehicles over such lands. It does not include core drilling for subsurface geologic information or drilling for oil and gas. These activities are authorized by the issuance of an oil and gas lease and the approval of an application for a permit to drill.

GOVERNOR'S CONSISTENCY REVIEW. Prior to plan approval, the BLM State Director submits a proposed resource management plan to the Governor for a consistency review with State and local plans, policies, or programs. (The State Director's signature and date on the Record of Decision associated with the environmental documents constitutes plan approval.) Any inconsistency known at that time is identified and explained by the State Director. The explanation provides the reason(s) for the known inconsistency. The Governor has 60 days to identify any other inconsistencies and provide recommendations to the State Director in writing. [See 43 CFR 1610.3-2(e).]

GRAZING ALLOTMENT. An area of land designated and managed for livestock grazing.

GRAZING PREFERENCE. The total number of animal unit months of livestock grazing on public land apportioned and attached to base property owned or controlled by a lessee.

HABITAT. The specific set of physical conditions that surround a single species, group of species, or large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

HABITAT MANAGEMENT PLAN (HMP). A plan designed to enhance, protect, and manage habitat for one or more plant or animal species.

HERD UNIT. Specific areas designated as units by the New Mexico Department of Game and Fish for game animal management.

HOLOCENE. That period of time (an epoch) since the last ice age.

HUNDRED YEAR FLOODPLAIN. Defined as that area of land that has a one percent chance of being inundated during any given year.

HYDROCARBONS. Any organic compound, whether gaseous, liquid, or solid, consisting solely of carbon and hydrogen: e.g., crude oil.

HYDROLOGY. The science which addresses the properties distribution and circulation of water on the land surface, in the aquifer, and in the atmosphere.

ISSUE. A matter of controversy over resource management activities that is topically discrete and provides alternatives for a decision. Usually the causal relationship between the activity and undesirable results is documentable and the level of controversy is high enough to merit further analysis. Statement of the planning issue orients the resource management planning process so that the vigor of interdisciplinary thought, analysis, and documentation is directed toward resolving the planning issues during the preparation of a resource management plan.

KARST. A type of topography that is formed over limestone, dolomite, or gypsum by dissolving or solution, and that is characterized by closed depressions or sinkholes, caves, and underground drainage (American Geological Institute).

KNOWN GEOLOGIC STRUCTURE (KGS). The trap in which an accumulation of oil and gas has been discovered by drilling and determined to be productive, the limits of which include all acreage that is presumptively productive. (43 CFR, 3100.0-5, October 1, 1983).

LAND TENURE ADJUSTMENT. Changes made in the ownership pattern of public land in order to adjust a resource area land base. The purpose of these changes is to improve the management of public, private, and State lands.

LAND WITHDRAWALS. The removal or withholding of public, lands by statute or secretarial order, from operation of some or all of the public land laws.

LEASABLE MINERALS (SOLIDS AND FLUIDS). This term refers to minerals such as sulphur, oil shale, oil and gas, and all other minerals that may be acquired under the Mineral Leasing Act of 1920, as amended.

LEGAL ACCESS. The right of access to public land by all modes or routes of travel which do not violate any law or regulation.

LIMITED FIRE SUPPRESSION. The policy which allows fire suppression activities to be dictated by prescribed fire parameters, i.e., temperature, fuels, wind, humidity, etc., to meet natural resource management objectives. Some areas may also have restrictions on the types or intensities of fire suppression activities allowed, e.g., equipment restrictions in order to protect other resource values.

LOCATABLE MINERALS. Metallic and nonmetallic minerals such as gold, lead, barite, fluorspar, or high calcium limestone, which are open to mining claim location under the 1872 mining law.

MANAGEMENT FRAMEWORK PLAN (MFP). A planning decision document that establishes, for a given planning area, land use allocations, coordination guidelines for multiple use, and management objectives to be achieved for each land use class or protection. An MFP is prepared in three steps: (1) resource recommendations, (2) impact analysis and alternative development, and (3) decision making.

MESOZOIC ERA. The period of geologic time between the end of the Paleozoic Era (about 225 millions years before present) and the beginning of the Cenozoic Era (about 65 million years before present).

MISSISSIPPIAN. The fifth of seven periods into which the Paleozoic Era is divided in the United States and some other parts of North America. Approximately equivalent to the Lower Carboniferous of the rest of the world; also the system of rocks formed during that period.

MITIGATION. The alleviation or lessening of possible adverse effects of an action upon a cultural resource by application of appropriate protection measures or adequate scientific study.

MULTIPLE-USE. The management of the public lands and their various resource values so that they are used in the combination that will best meet the present and future needs of the American people. These resources include, but are not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, as well as natural scenic, scientific, and historical values. The goal of multiple use is the harmonious and coordinated management of the various resources without permanent impairment of the productivity of the lands and the quality of the environment. Consideration is given to the relative values of the resources and not, necessarily, to the combination of uses that will give the greatest economic return or the greatest unit output. (See the Federal Land Policy and Management Act)

NATIONAL NATURAL LANDMARK. A specific area designated by the Secretary of the Interior which contains a representative example(s) of the nation's natural history. It can include terrestrial communities, aquatic communities, landforms, geological features, or habitats of native plant and animal species. A landmark must possess national significance in illustrating or interpreting the nation's natural heritage.

NATIONAL REGISTER OF HISTORIC PLACES. The official list, established by the Historic Preservation Act of 1966, of the nation's cultural resources worthy of preservation. The Register lists archeological, historic, and architectural properties, i.e., districts, sites, buildings, structures, and objects, nominated for their local, state, or national significance by state or Federal agencies and approved by the Advisory Council for Historic Preservation.

NONELIMINATION UNIT (OIL AND GAS). Any unit where all leases are held and considered "in production" until the last well in the entire unit has ceased production.

NO SURFACE DISTURBANCE. A stipulation which is defined individually when the activity plan is developed. In general, land uses would be allowed as long as they do not interfere with the management objectives of the area.

NO SURFACE OCCUPANCY (NSO). A fluid mineral leasing stipulation that prohibits occupancy or disturbance of all, or part of, the lease surface in order to protect special values or uses. Lessees may exploit the oil and gas or geothermal resource in this lease by directional drilling from sites outside the no surface occupancy area.

OFF-ROAD VEHICLE (ORV). Any motorized vehicle designed for, or capable of, cross-country travel on land, water, sand, snow, ice, marsh, swampland, or other terrain excluding: (a) any nonamphibious registered motorboat; (b) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (c) any vehicle whose use is expressly permitted by the authorized officer, or otherwise officially approved; (d) vehicles in official use; and (e) any combat or combat support vehicle when use in times of National defense emergencies.

OFF-ROAD VEHICLE DESIGNATIONS - LIMITED, CLOSED, OPEN. Open refers to designated areas and trails where off-road vehicles may be operated subject to the BLM operating regulations and vehicle standards. Limited refers to designated areas and trails where the use of off-road vehicles is subject to restrictions deemed appropriate by the authorized officer. Closed refers to designated areas and trails where the use of off-road vehicles is permanently or temporarily prohibited.

OUTSTANDING NATURAL AREA (ONA). Areas of outstanding scenic splendor, natural wonder, or scientific importance that merit special attention and care in management to ensure their preservation in their natural condition. These areas are usually undisturbed, and may contain rare botanical, geological, or zoological values which are of interest for scientific research purposes. Access roads and public use facilities are normally located on periphery of the area.

PALEONTOLOGY. The science that deals with the life of past geological periods, based on the study of fossil remains of plants and animals.

PALEOZOIC. That era of geologic time between the end of the Precambrian to the beginning of the Mesozoic, or from about 570 million to about 225 million years ago.

PAYMENT IN LIEU OF TAXES. Payments received by individual counties from the Federal Government for Federal lands within the counties. Total Federal acreage and population are used to determine the funding levels.

PENNSYLVANIAN. In the United States, the sixth of seven periods of the Paleozoic Era. Equivalent, approximately, to the Upper Carboniferous period outside of the United States. Also, the system of rocks deposited during that period.

PERMIAN. The last of seven periods of the Paleozoic Era; also the system of rocks deposited during that period.

PERMIAN BASIN. A mature petroleum-producing province extending over approximately 80,000 square miles of west Texas and southeastern New Mexico; its sedimentary rocks are more than 25,000 feet thick in its deepest parts. From: Future Supply of Oil and Gas from the Permian Basin of west Texas and southeastern New Mexico. Geological Survey Circular 828. 1980.

PERMIAN REEF. A fossil reef complex composed of the Capitan and the underlying Goat Seep reefs.

PLANNING CRITERIA. The standards developed by the manager and interdisciplinary teams for their use in forming judgments about decisionmaking, analysis, and data collection during planning. They streamline and simplify the subsequent prescribed resource management planning actions by setting forth the standards for making decisions in each of the prescribed planning actions.

PLAYA. A natural ephemeral water catchment basin.

PLEISTOCENE. The earlier of the two epochs comprising the Quaternary Period. Also the Post-Pliocene Glacial Age. Also the series of sediments deposited during this epoch.

POTASH. Ore containing sylvite or langbenite. (Potash EAR, 1975, BLM)

POTASH TAILING. Waste discharged from refineries consisting mainly of halite (NaCl), clay, and some sylvite (KCl).

PRECAMBRIAN. The era of geologic time before 570 million years ago.

PRESCRIBED BURNS. The use of fire within certain burning parameters, i.e., temperature, fuels, wind, humidity, etc., to bring about desirable changes in vegetation.

PSEUDORIPARIAN AREAS. Ephemeral drainages which contain a more varied vegetation composition than the surrounding upland areas.

PUBLIC ROAD. "All roads and highways, except private roads, established in pursuance of any law of New Mexico, and roads dedicated to public use, that have not been vacated or abandoned, and such other roads as are recognized and maintained by the corporate authorities of any county in New Mexico..." (source: NMSCA 1978, section 67-2-1). Examples of public roads are State or Federal highways, county roads or municipal streets.

RANCH BUDGET MODELS. Computer models developed from local ranch prices and costs that project the relative economic impacts of proposed and alternative management actions on the local ranching industry.

RAPTOR. Any predatory bird, such as a falcon, hawk, eagle, or owl, that has feet with sharp talons or claws adapted for seizing prey and a hooked beak for tearing flesh.

RECLAMATION. The process of returning disturbed lands to their original form and productivity.

RECORD OF DECISION. A brief statement which, when signed by the State Director and dated, approves a plan or amendment and completes the associated Environmental Impact Statement. It indicates: (1) which alternative, modifications, or combination of alternatives has been approved as the plan, (2) what alternatives were considered in reaching this decision, specifying which alternative is considered environmentally preferable, and including a brief discussion of the relevant factors which contributed to the decisions, and (3) whether all practicable means to avoid or minimize environmental harm from the plan have been adopted, and if not, why not. The record of decision also refers to the appropriate sections in the plan which describe standards and intervals for monitoring and evaluation. The requirements for the record of decision may be found in 40 CFR 1505.2.

RECREATION EXPERIENCE. The expected or desired psychological and physiological outcomes from engaging in a specific recreation activity within a specific setting.

RECREATION OPPORTUNITY SPECTRUM (ROS). Continuum used to characterize recreation opportunities relative to setting, activity, and experience opportunities.

RECREATION AND PUBLIC PURPOSES ACT (R&PP). The Act of June 14, 1926, as amended (43 U.S.C. 869, 86904). Allows the disposal of public lands to any State, local, Federal, or political instrumentality or nonprofit organization for any recreational or public purpose, at the discretion of the authorized officer.

RESEARCH NATURAL AREA (RNA). An area that is established and maintained for primary purpose of research and education because the land has one or more of the following characteristics: (1) a typical representation of a common plant or animal association; (2) an unusual plant or animal association; (3) a threatened or endangered plant or animal species; (4) a typical representation of common geologic, oil, or water features; or (5) outstanding or unusual geologic, soil, or water features.

RESOURCE MANAGEMENT PLAN (RMP). A land use plan as described by the Federal Land Policy and Management Act. The resource management plan generally establishes in a written document: (1) Land areas for limited, restricted or exclusive use; designation, including Areas of Critical Environmental Concern designation; and transfer from BLM Administration; (2) Allowable resource uses (either singly or in combination) and related levels of production or use to be maintained; (3) Resource condition goals and objectives to be attained; (4) Program constraints and general management practices needed to achieve the above items; (5) Need for an area to be covered by more detailed and specific plans; (6) Support action, including such measures as resource protection, access, development, realty action, cadastral survey, etc., as necessary to achieve the above; (7) General implementation sequences, where carrying out a planned action is dependent upon prior accomplishment of another planned action; and (8) Intervals and standards for monitoring and evaluating the plan to determine the effectiveness of the plan and the need for amendment or revision. It is not a final implementation decision on actions which require further specific plans, process steps, or decisions under specific provisions of law and regulations.

RETENTION ZONE. All areas of the Carlsbad Resource Area which are not in identified disposal zones. This area will be managed so as to have no significant reduction of Federal acres. The primary goal is to consolidate land ownership patterns through State and private exchanges.

RIGHT-OF-WAY AVOIDANCE AREAS. Areas in which rights-of-way will be prohibited due to sensitive resources.

RIGHT-OF-WAY CORRIDOR. A narrow strip of land, usually one mile wide, in which numerous rights-of-way may be placed in order to make maximum use of those Federal lands and reduce surface disturbance.

RIPARIAN. A habitat type which is situated on, or pertaining to, the bank of a river, stream, or other body of water. The term is normally used to refer to plants of all types that grow rooted in water tables of streams, ponds, and springs.

SALABLE MINERAL MATERIALS. Mineral materials such as sand, gravel, or caliche, which are mined and sold, usually for construction purposes.

SALADO FORMATION. The salt bearing formation of the Upper Permian Period.

SCENIC AREA. An area established along highways, roads, trails, or streams which shall be managed to protect and/or enhance the scenic qualities and visual sensitivity that lead to the designation of the area.

SCENIC QUALITY. The relative worth of a landscape from a visual perception point-of-view.

SCENIC QUALITY RATING. The relative scenic quality (A, B, or C) assigned to a landscape by applying the scenic quality evaluation key factors. A is the highest rating, B is intermediate, and C is the lowest.

SCOPING PROCESS. Early process for determining scope of issues to be addressed and for identifying significant issues related to proposed action.

SECTION 3 PERMIT. A permit authorizing grazing use on public lands inside the grazing District boundary. It is a reference to that section of the Taylor Grazing Act pertaining to land within the District boundary.

SECTION 4 PERMIT. A permit issued by BLM for the permittee to construct a project on public lands as defined in the Taylor Grazing Act.

SECTION 15 LEASE. A lease authorizing grazing use on public lands outside the grazing district boundary. It refers to that section of the Taylor Grazing Act pertaining to lands outside the grazing district boundary.

SEDIMENT. Solid, particulate material, both mineral and organic, that is in suspension, is being transported or has been moved from its site of origin by water, wind, gravity, or ice and has come to rest on earth's surface, either above or below sea level.

SEDIMENT YIELD. The quantity of mineral or organic solid material moving past a cross-section of a channel within a specified time interval.

SEDIMENTATION. The process or action of depositing mineral and organic solid material that has been moved from the site of origin by the forces of air, water, gravity, or ice.

SELECTIVE MANAGEMENT. The assignment of grazing allotments into one of three resource management categories: M--Maintain, I--Improve, C--Custodial. This categorization is designed to facilitate assigning management priorities among allotments.

SENSITIVE SPECIES. Any plant or animal species which respond negatively to sudden changes in their environment.

SIGNIFICANT/SIGNIFICANCE. A high degree of importance as indicated by either quantitative measurements or qualitative judgments. Significant issues and impacts require explicit consideration in preparing a plan. Significance may be determined by evaluating characteristics pertaining to location, extent, consequences, and duration. As used in National Environmental Policy Act, significance requires consideration of both context and intensity. (See 40 CFR 1508.17).

SLUMPING (SOIL). The collapse of unconsolidated materials on near vertical slopes.

SOLUTION MINING. The in-place dissolution of water-soluble mineral salts of an ore with a leaching solution.

SPECIAL MANAGEMENT AREA (SMA). An area requiring special management by BLM to protect one or more resource values. An SMA may include non-public lands and minerals that BLM wishes to acquire or to bring under a Cooperative Management Agreement to better manage the valued resource. At a minimum, an activity plan will be prepared for an SMA. SMAs may be given designations under various existing labels such as Area of Critical Environmental Concern or Research Natural Area. SMAs are not necessarily "locked up" from development if the development activity does not conflict with the management objectives for the area.

SPECIAL RECREATION MANAGEMENT AREA (SRMA). Areas requiring explicit recreation management to achieve BLM's recreation objectives and to provide specific recreation opportunities.

SPECIES RICHNESS. The value of a habitat to support high variety, numbers, and density of animal species.

STANDARD HABITAT SITE (SHS). The description of animal communities using standard descriptions of vegetation, soil, land form, and other ecosystem determinants.

STOCKING RATE. The number of specified kind and class of animals grazing a unit of land for a specified period of time; may be expressed as a ratio, such as animal unit/Section, acres/animal unit month.

STRATA. More than one sedimentary bed or layer, regardless of thickness.

SUBSIDENCE. A geologic term which refers to movement of surface material which is displaced vertically downward with little or no horizontal component.

SUSTAINED YIELD. Achievement and maintenance in perpetuity of high level of annual or regular periodic output of various renewable resources of public lands consistent with multiple use.

SYLVITE. A mineral composed of Potassium Chloride (KCl). Sylvite is the principal ore of potassium.

TARGET SPECIES. In vegetative control, the species for which the project is designed to reduce or control.

THREATENED SPECIES. Any species likely to become endangered within the foreseeable future throughout all, or a significant part, of its range.

TRANSURANIC WASTE. Transuranic wastes are byproducts produced from defense related nuclear operations. "Transuranic" refers to elements heavier than uranium; the most important of these is plutonium.

TRIASSIC. The earliest of the three periods of the Mesozoic Era; also the system of strata deposited during that period.

VEGETATIVE PRODUCTIVITY. The ability of vegetation to produce plant materials; i.e., leaves, stems, total biomass.

VERTEBRATE FAUNA. Any animal species characterized by a skull surrounding the brain, and a bony skeleton with a spinal column.

VISUAL RESOURCE MANAGEMENT (VRM). The system by which BLM classifies and manages the visual resource of public lands. Classifications are made based on their scenic qualities, sensitivities, and the distances from which they are viewed. The system includes actions taken to identify visual values, to establish objectives for managing these values, and to achieve the visual management objectives. (See Appendix E)

VISUAL SENSITIVITY. The degree of concern expressed by users toward scenic quality and existing or proposed visual change in a particular characteristic landscape.

WILDERNESS. "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Wilderness is an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value. (Section 2(c) of the Wilderness Act of 1964)

WILDERNESS STUDY AREA (WSA). Roadless area of land that has been inventoried and found to have wilderness characteristics as described in Section 603 of FLPMA and Section 2(c) of the Wilderness Act of 1964 (78 Stat. 891).

LIST OF ACRONYMS

ACEC	Area of Critical Envrionmental Concern
AMP	Allotment Management Plan
APD	Application for Permit to Drill, Deepen, or Plugback
AT	Access Tract
AUM	Animal Unit Month
BLM	Bureau of Land Management
BR	Bureau of Reclamation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CMA	Cooperative Management Agreement
CMP	Cooperative Management Plan
C&MU	Classification and Multiple Use
CRA	Carlsbad Resource Area
CRF	Cave Research Foundation
CRMA	Cultural Resource Management Area
CRMP	Cultural Resources Management Plan
DOD	Department of Defense
DOE	Department of Energy
EA	Environmental Assessment
EAR	Environmental Assessment Record
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act
FPC	Federal Power Commission
FS	Forest Service
FWS	Fish and Wildlife Service
HMP	Habitat Management Plan
IHICS	Integrated Habitat Inventory Classification System
IMP	Interior Management Plan
KGS	Known Geologic Structure
MCF	Thousand Cubic Feet
MMS	Minerals Management Service
MOU	Memorandum of Understanding
MSA	Management Situation Analysis
MFP	Management Framework Plan
MLRA	Major Land Resource Area
NEPA	National Environmental Policy Act
NMDG&F	New Mexico Department of Game and Fish
NMEID	New Mexico Environmental Improvement Division
NMOCD	New Mexico Oil Conservation Division
NOI	Notice of Intent
NOL	Not Open to Leasing
NPC	National Potash Corporation
NSO	No Surface Occupancy
NSS	National Speleological Society
NTL	Notice to Lessees

ONA	Outstanding Natural Area
ORP	Outdoor Recreation Planner
ORV	Off-Road Vehicle
PILT	Payment in Lieu of Taxes
PLO	Public Land Order
PL	Public Law
RAMP	Recreation Area Management Plan
RMP	Resource Management Plan
RNA	Research Natural Area
ROS	Recreation Opportunity Spectrum
R&PP	Recreation and Public Purpose
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SCS	Soil Conservation Service
SHPO	State Historic Preservation Officer
SHS	Standard Habitat Site
SMA	Special Management Area
SO	Secretarial Order
SRMA	Special Recreation Management Area
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USGS	United States Geological Survey
VRM	Visual Resource Management
WIPP	Waste Isolation Pilot Plant
WSA	Wilderness Study Area

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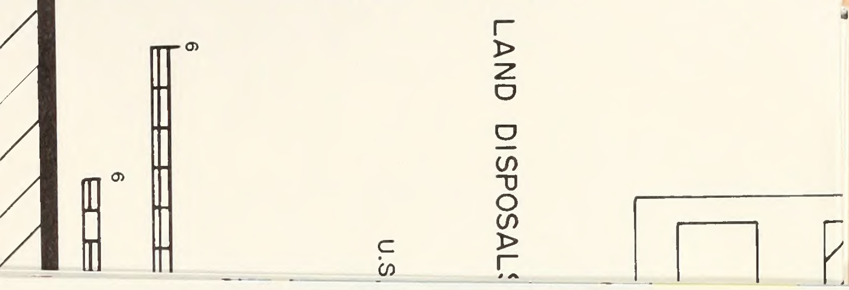
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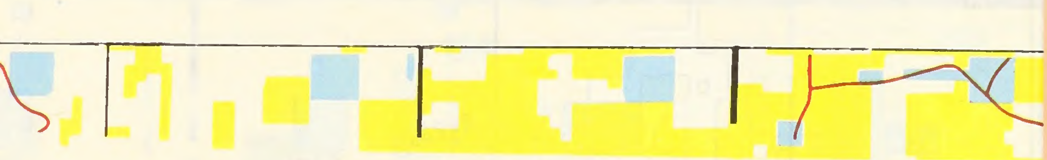

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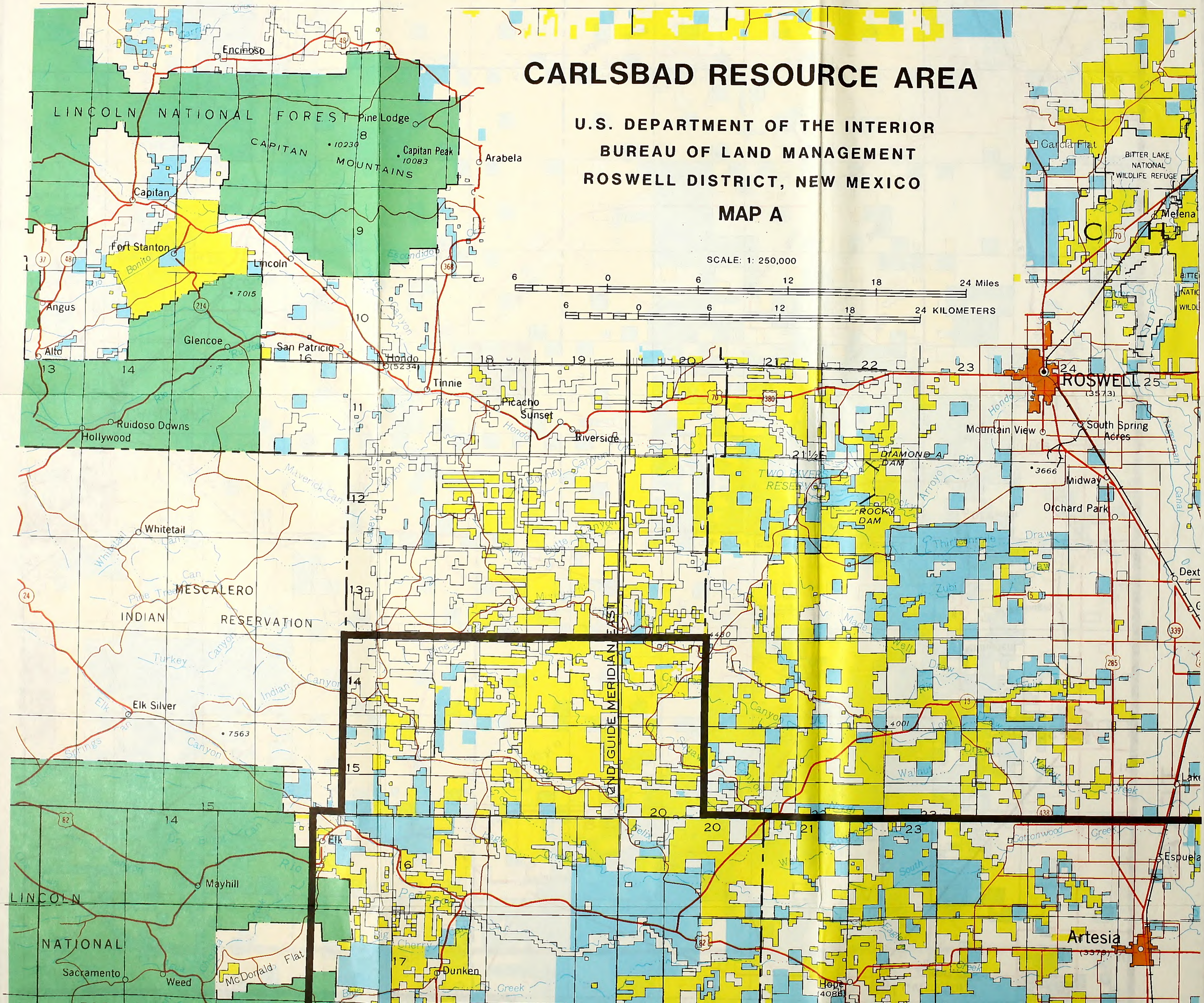

CARLSBAD RESOURCE AREA

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ROSWELL DISTRICT, NEW MEXICO

MAP A

SCALE: 1: 250,000

6 0 6 12 18 24 Miles
6 0 6 12 18 24 KILOMETERS
LINCOLN NATIONAL FOREST
CAPITAN MOUNTAINS
Encinoso
Pine Lodge
10230
Capitan Peak 10083
Arabela
Capitan
Fort Stanton
Bonito
Lincoln
Escondido
7015
Angus
Glencoe
San Patricio
Alto
Hondo (5234)
Tinnie
Picacho
Sunset
Riverside
Ruidoso Downs
Hollywood
Caña Flat
BITTER LAKE NATIONAL WILDLIFE REFUGE
Melena
ROSWELL (3573)
Mountain View
South Spring Acres
3666
Midway
Orchard Park
DIAMOND A DAM
TWO RIVERS RESERVOIR
ROCKY DAM
Dext
Whitetail
MESCALERO INDIAN RESERVATION
Turkey Canyon
Indian Canyon
Elk Silver
7563
2ND GUIDE MERIDIAN EAST
4450
4001
Elk
Mayhill
LINCOLN NATIONAL
Sacramento
Weed
McDonald Flat
Cherry
Dunken
Hope (4088)
Cottonwood Creek
Espuela
Artesia (3379)
Lake
Walnut
Felix
Penasco
Rio Hondo
Thirteenmile Draw
Zuni
Salt Creek
21½E
13
14
15
16
17
18
19
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380
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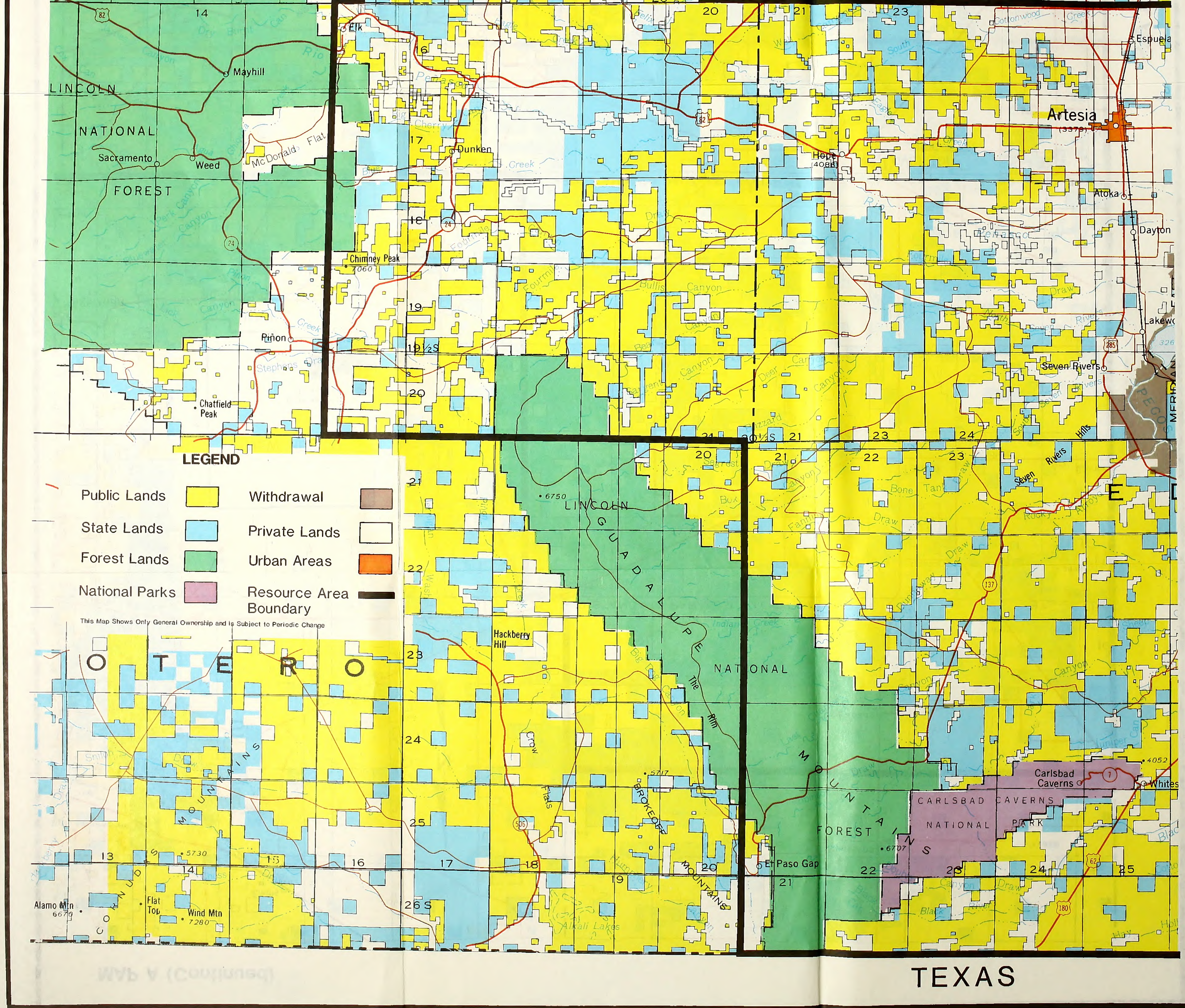LEGEND
Public Lands
Withdrawal
State Lands
Private Lands
Forest Lands
Urban Areas
National Parks
Resource Area Boundary
This Map Shows Only General Ownership and Is Subject to Periodic Change
LINCOLN NATIONAL FOREST
Mayhill
Sacramento
Weed
McDonald Flat
Elk
Dunken
Chimney Peak 7060
Piñon
Chatfield Peak
Artesia (3379)
Hope (4088)
Espuela
Atoka
Dayton
Lakewood
Seven Rivers
Seven Rivers Hills
PECOS
LINCOLN GUADALUPE NATIONAL FOREST
GUADALUPE MOUNTAINS
The Rim
BROKEOFF MOUNTAINS
Hackberry Hill
6750
5717
OTERO
CORNUDAS MOUNTAINS
Alamo Mtn 6670
Flat Top
Wind Mtn 7280
5730
Alkali Lakes
El Paso Gap
6707
CARLSBAD CAVERNS NATIONAL PARK
Carlsbad Caverns
Whites
4052
TEXAS
82
24
285
137
506
7
62
180
14
16
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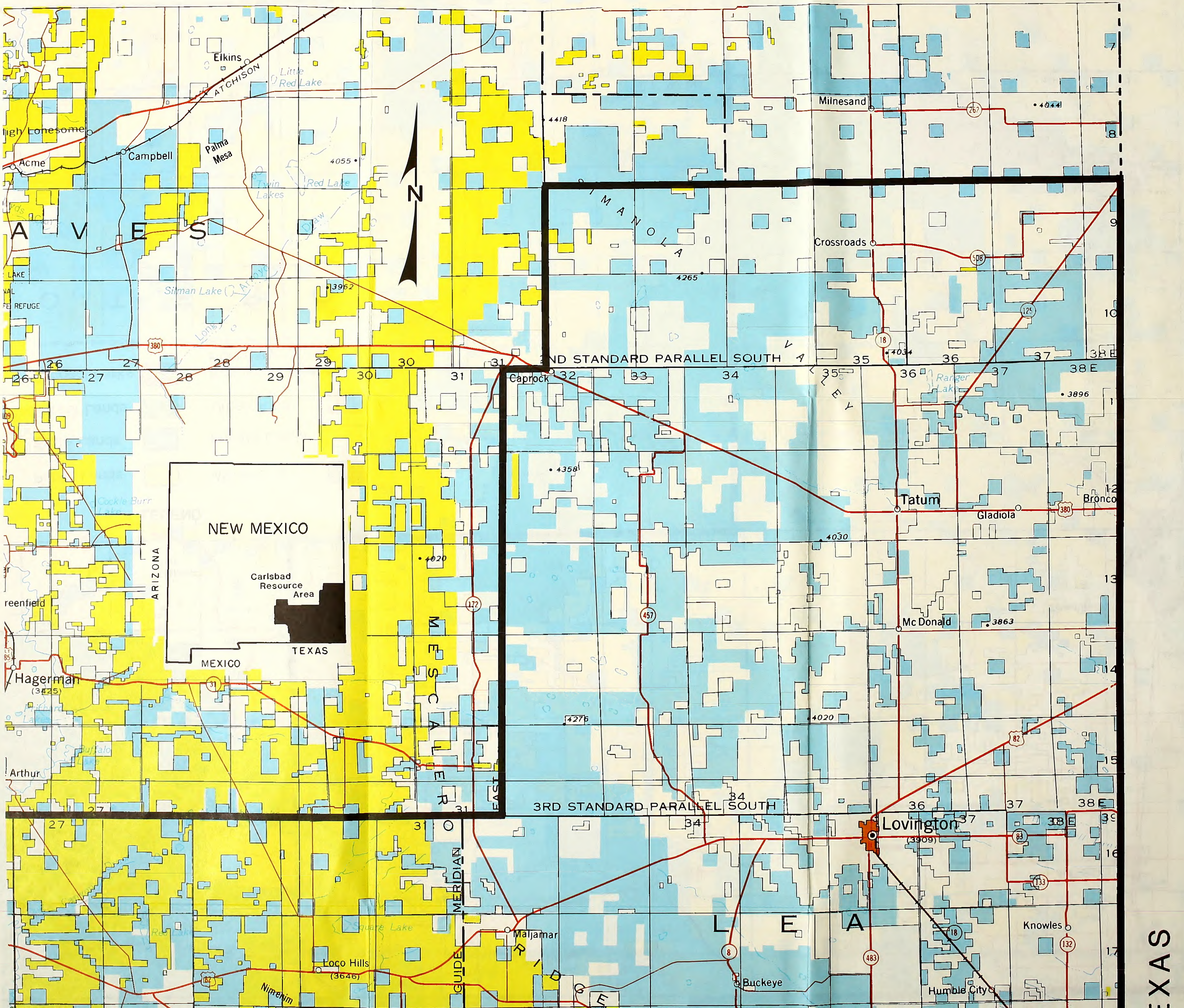
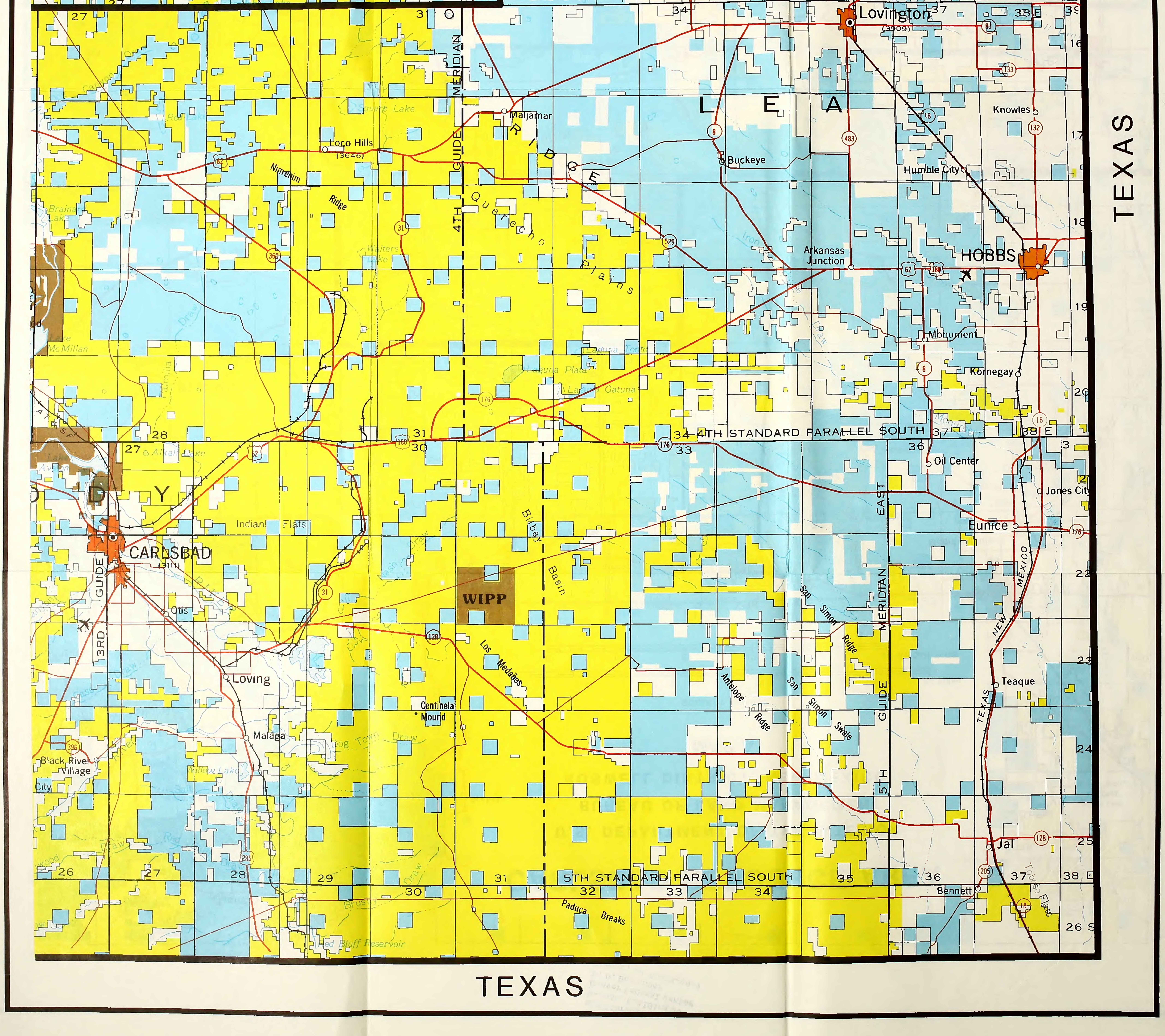
MAP A (Continued)


Elkins
ATCHISON
Little Red Lake
High Lonesome
Acme
Campbell
Palma Mesa
4055
Red Lake
Twin Lakes
N
4418
Milnesand
267
4044
7
8
CHAVES
SIMANOLA
Crossroads
508
9
4265
LAKE
REFUGE
Siman Lake
3962
125
10
380
18
4034
2ND STANDARD PARALLEL SOUTH
VALLEY
Caprock
26
27
28
29
30
31
32
33
34
35
36
37
38 E
Ranger Lake
3896
4358
Tatum
Gladiola
Bronco
11
12
NEW MEXICO
ARIZONA
Carlsbad Resource Area
TEXAS
MEXICO
4020
4030
172
457
Greenfield
Mc Donald
3863
13
14
Hagerman
(3425)
MESCALERO
4276
4020
82
15
Arthur
EAST
3RD STANDARD PARALLEL SOUTH
Lovington
(3909)
83
133
16
GUIDE MERIDIAN
Maljamar
RIDGE
LEA
Knowles
132
17
8
483
18
Loco Hills
(3646)
Square Lake
Nimenim
Buckeye
Humble City
TEXAS


LEA
EDDY
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Lovington
(3909)
Maljamar
Loco Hills
(3646)
Buckeye
Knowles
Humble City
HOBBS
Arkansas Junction
Monument
Kornegay
Oil Center
Jones City
Eunice
CARLSBAD
(3111)
Otis
Loving
Malaga
Black River Village
Teaque
Jal
Bennett
WIPP
Centinela Mound
RIDGE
Nimenim Ridge
Querecho Plains
Square Lake
Red Lake
Brainard Lake
Walters Lake
Lake McMillan
Laguna Tonto
Laguna Plata
Laguna Gatuna
Alkali Lake
Lake Avalon
Indian Flats
Bilbey Basin
Los Medaños
San Simon Ridge
Antelope Ridge
San Simon Swale
Dog Town Draw
Willow Lake
Paduca Breaks
Red Bluff Reservoir
Monument Draw
Custer Flats
4TH GUIDE MERIDIAN
4TH STANDARD PARALLEL SOUTH
5TH STANDARD PARALLEL SOUTH
5TH GUIDE MERIDIAN EAST
3RD GUIDE
NEW MEXICO
TEXAS
AT&SF
8
18
31
62
82
128
132
133
176
180
205
285
360
396
483
529
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36
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38 E
39

CARLSBAD RESOURCE AREA
MANAGEMENT PLAN
1985
MAP B

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

LAND TENURE ADJUSTMENTS

LEGEND

☒ - WIPP SITE

▨ - DISPOSAL AREAS

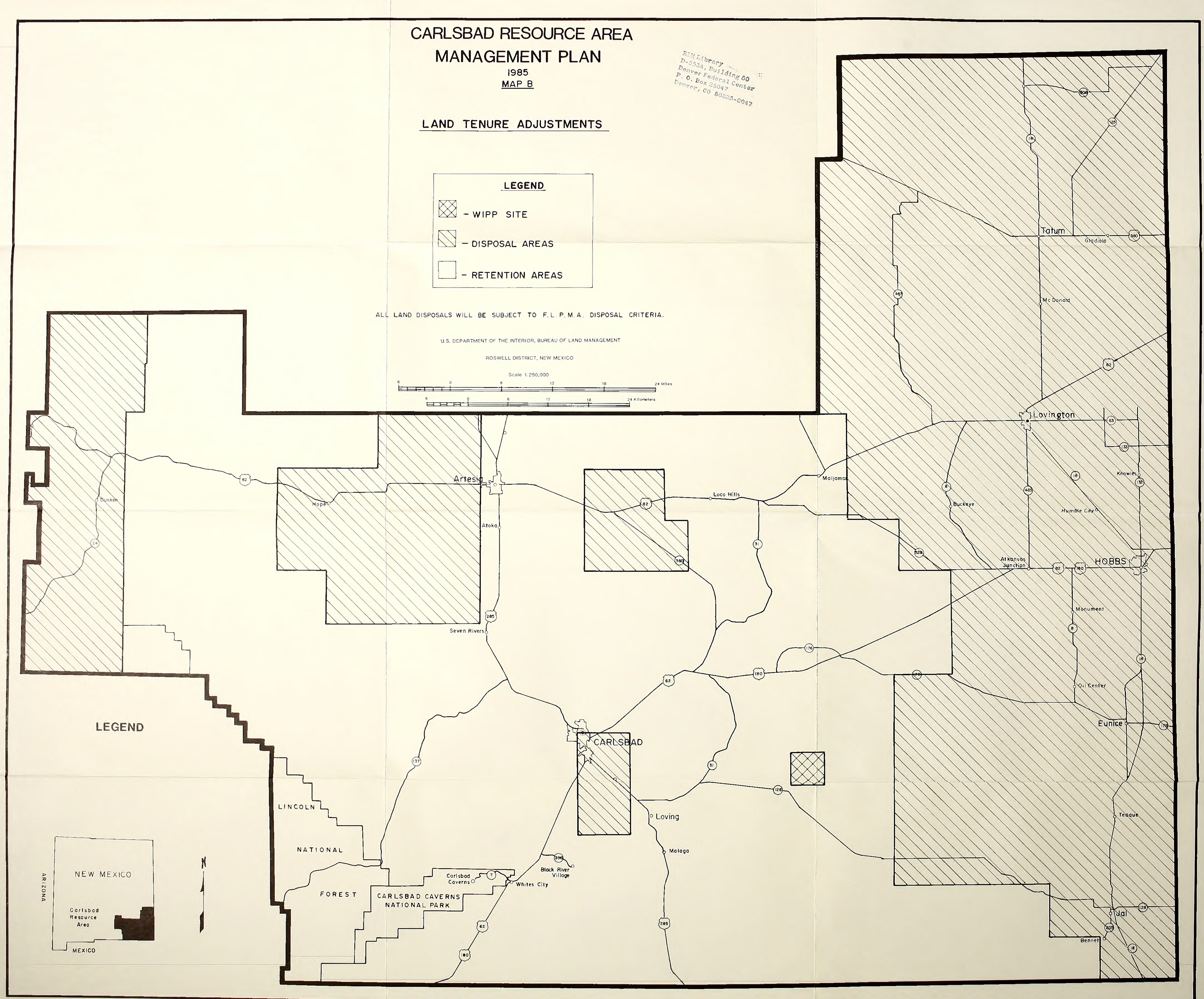
☐ - RETENTION AREAS

ALL LAND DISPOSALS WILL BE SUBJECT TO F.L.P.M.A. DISPOSAL CRITERIA.

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT

ROSWELL DISTRICT, NEW MEXICO

Scale 1:250,000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0
6
12
18
24 Miles
6
0
6
12
18
24 Kilometers
Tatum
Gladiola
McDonald
Lovington
Knowles
Buckeye
Humble City
Maljamar
Loco Hills
Artesia
Hope
Dunken
Atoka
Seven Rivers
Arkansas Junction
HOBBS
Monument
Oil Center
Eunice
Teague
Jal
Bennet
CARLSBAD
Loving
Malaga
Black River Village
Whites City
Carlsbad Caverns
CARLSBAD CAVERNS NATIONAL PARK
LINCOLN
NATIONAL
FOREST
LEGEND
NEW MEXICO
ARIZONA
MEXICO
Carlsbad Resource Area
N
82
24
285
137
62
180
396
7
31
360
176
128
529
483
8
18
132
206
125
457
380

CARLSBAD RESOURCE AREA MANAGEMENT PLAN

1985

MAP C

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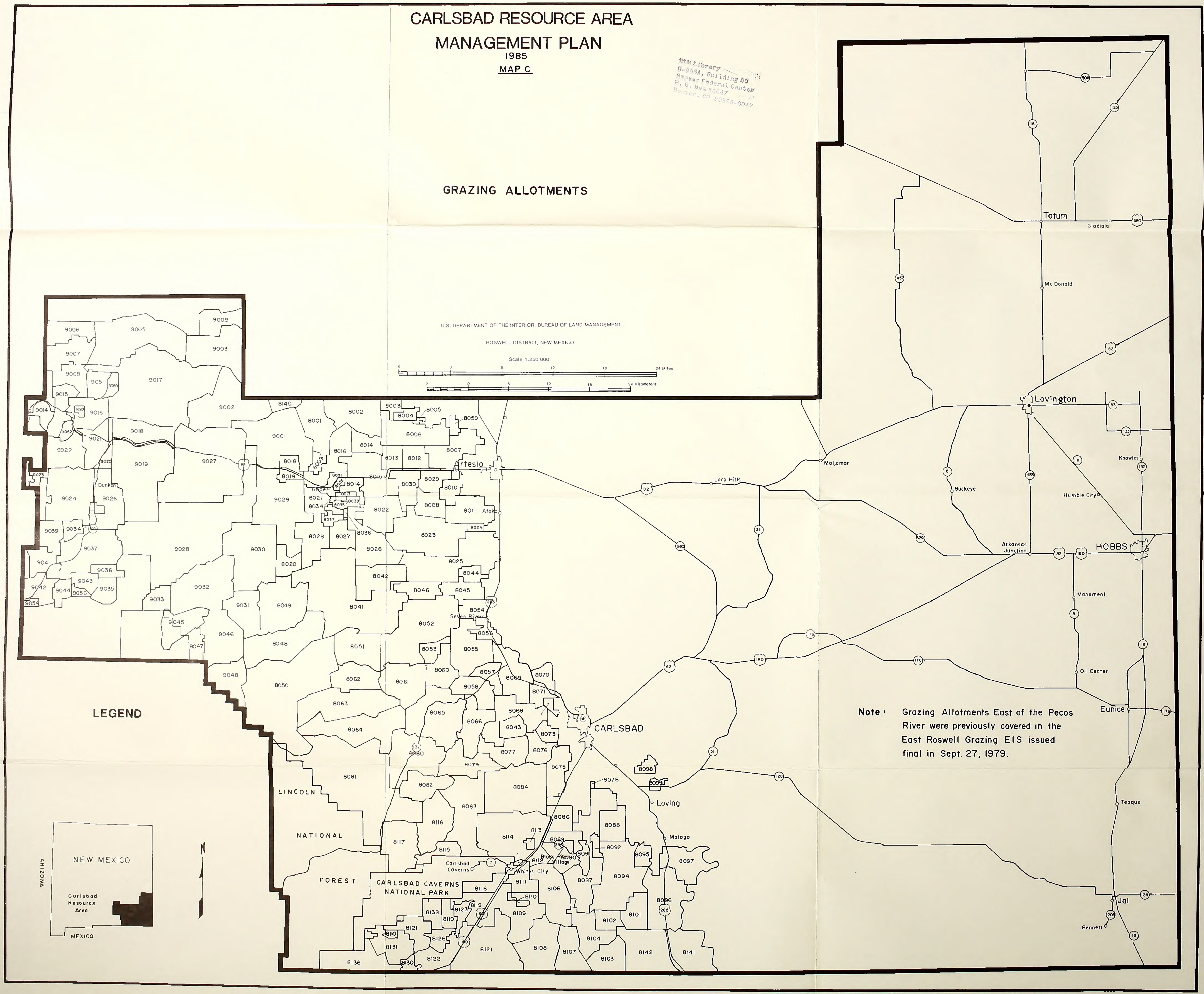
Denver, CO 80225-0047

GRAZING ALLOTMENTS

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT

ROSWELL DISTRICT, NEW MEXICO

Scale 1:250,000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6 0 6 12 18 24 Kilometers
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Mc Donald
Lovington
Maljamar
Loco Hills
Buckeye
Knowles
Humble City
Atkansas Junction
HOBBS
Monument
Oil Center
Eunice
Teague
Jal
Bennett
Artesia
Hope
Dunken
Atoka
Seven Rivers
CARLSBAD
Loving
Malaga
Carlsbad Caverns
Whites City
Black River Village
LINCOLN
NATIONAL
FOREST
CARLSBAD CAVERNS NATIONAL PARK
LEGEND
NEW MEXICO
ARIZONA
MEXICO
Carlsbad Resource Area

Note: Grazing Allotments East of the Pecos River were previously covered in the East Roswell Grazing EIS issued final in Sept. 27, 1979.

CARLSBAD RESOURCE AREA MANAGEMENT PLAN

1985

MAP D

SPECIAL MANAGEMENT AREAS AND PRIMARY CAVE OCCURRENCE ZONE

LEGEND

☐ — SPECIAL MANAGEMENT AREAS (SMAs)

■ — SMAs PARTIALLY OR COMPLETELY INSIDE OTHER SMAs

⌜⌟ — PRIMARY CAVE OCCURRENCE ZONE

NOTE: SPECIFIC DESCRIPTIONS FOR EACH IS IN APPENDIX E

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT

ROSWELL DISTRICT, NEW MEXICO

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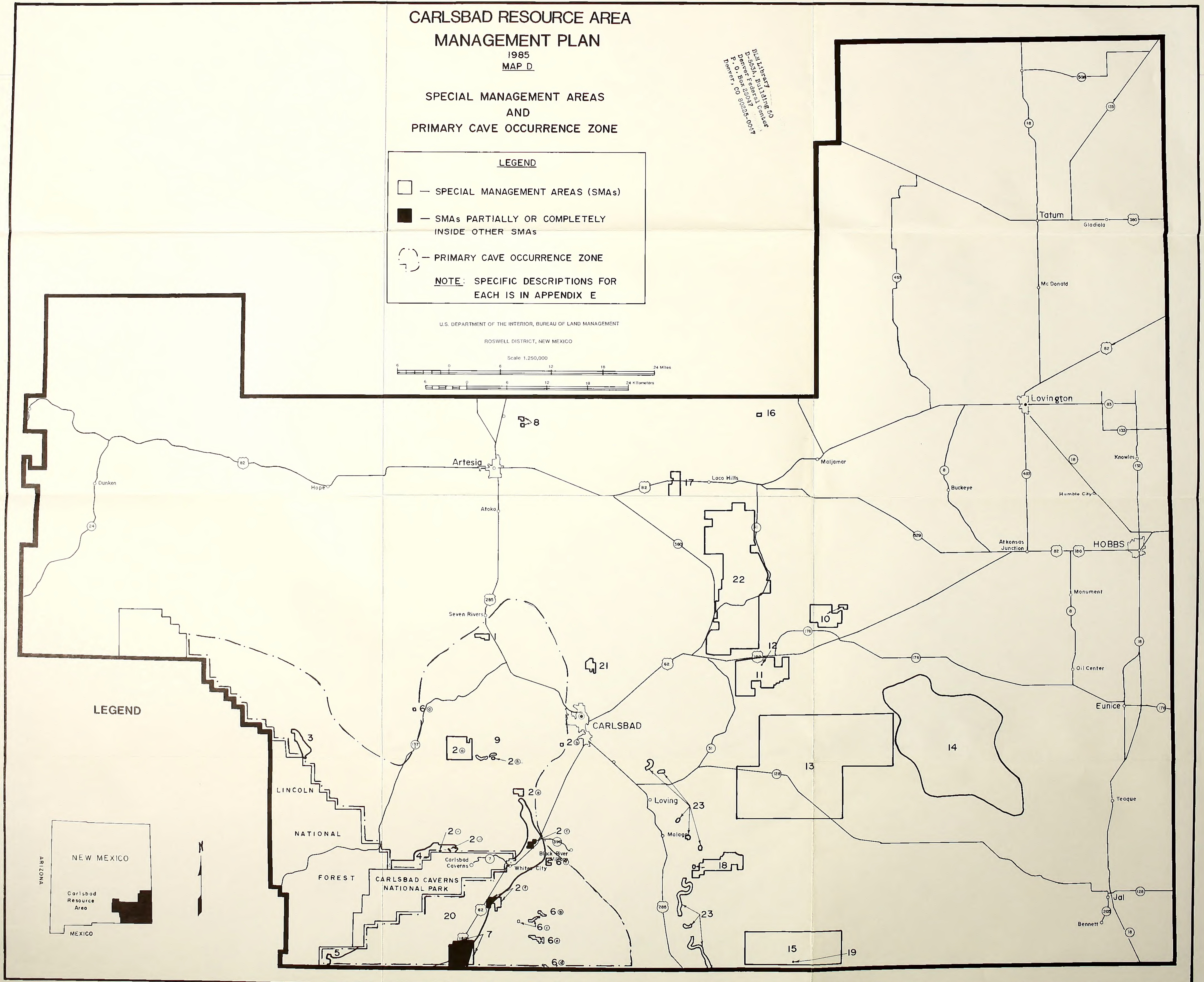
6 0 6 12 18 24 Miles
6 0 6 12 18 24 Kilometers
Tatum
Gladiola
McDonald
Lovington
Knowles
Humble City
Buckeye
Maljamar
Loco Hills
Artesia
Dunken
Hope
Atoka
Atkonsas Junction
HOBBS
Monument
Oil Center
Eunice
Teaque
Jal
Bennett
Seven Rivers
CARLSBAD
Loving
Malaga
Carlsbad Caverns
Black River Village
White City
LINCOLN
NATIONAL
FOREST
CARLSBAD CAVERNS NATIONAL PARK
LEGEND
NEW MEXICO
ARIZONA
MEXICO
Carlsbad Resource Area
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2ⓐ
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508
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